ENGINEERING NEWS-RECORD

A McGRAW-HILL PUBLICATION

This
"Largest of its kind"
AIR CONDITIONING SYSTEM
checks corrosion with

BYERS WROUGHT IRON PIPE

Said to be the largest job of its kind, and one of the largest office building installations in the country, the air conditioning in this Oklahoma City building is safeguarded against corrosion by Byers Wrought Iron pipe.

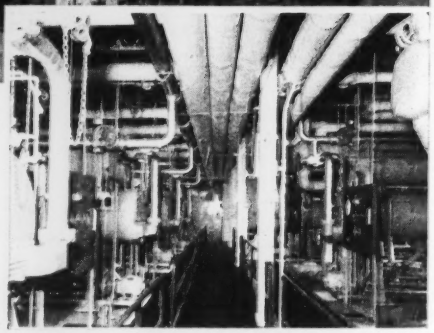
Chilled water lines, recirculating water lines, and condensed water lines all utilize this time-proven material. This 1350-ton absorption-type refrigeration equipment is located in a pent-house on the 14th floor roof of one of the wings. Chilled water lines are carried on bridges across areaways. Design contemplates the use of 45° F. water.

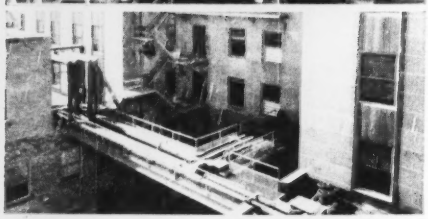
The Southwest has been a leader in the use of air conditioning equipment, and it is interesting to note how widely engineers have forestalled corrosive attack by using Byers Wrought Iron. Since the cost of even minor repairs is bound to be high, this use of wrought iron is a definite economy measure.

Wrought iron owes its ability to combat corrosion to its unusual composition and structure. Tiny fibers of glass-like silicate slag, threaded through the body of high-purity iron, act like a series of baffles, to halt and disperse corrosive attack. The fibers also anchor the initial protective scale, which shields the underlying metal. In cases where galvanizing is used, the naturally rougher surface of wrought iron takes and retains a heavier coating of spelter.

With air conditioning becoming a "must" in new office building construction in many sections, you may be interested in the information contained in our bulletin WROUGHT IRON FOR REFRIGERATION AND AIR CONDITIONING INSTALLATIONS. We will be glad to send you a copy.

A. M. Byers Co., Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, Salt Lake City, San Francisco. Export Division: New York, N. Y.





CORROSION COSTS YOU MORE THAN WROUGHT IRON

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TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

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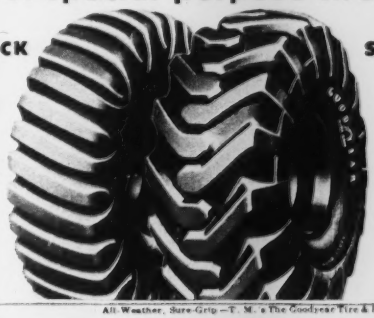

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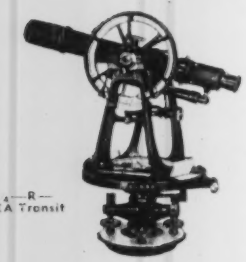

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ENGINEERING NEWS-RECORD

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Volume 145 AUGUST 31, 1950 No. 9

WALDO G. BOWMAN
Editor

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THIRTEEN! Think that over you fellows who are planning ahead for the purchase of Shovel, Crane or Dragline equipment. You are looking for machine advantages that will make money. You're in business for profit — and Northwests are built to make profits.

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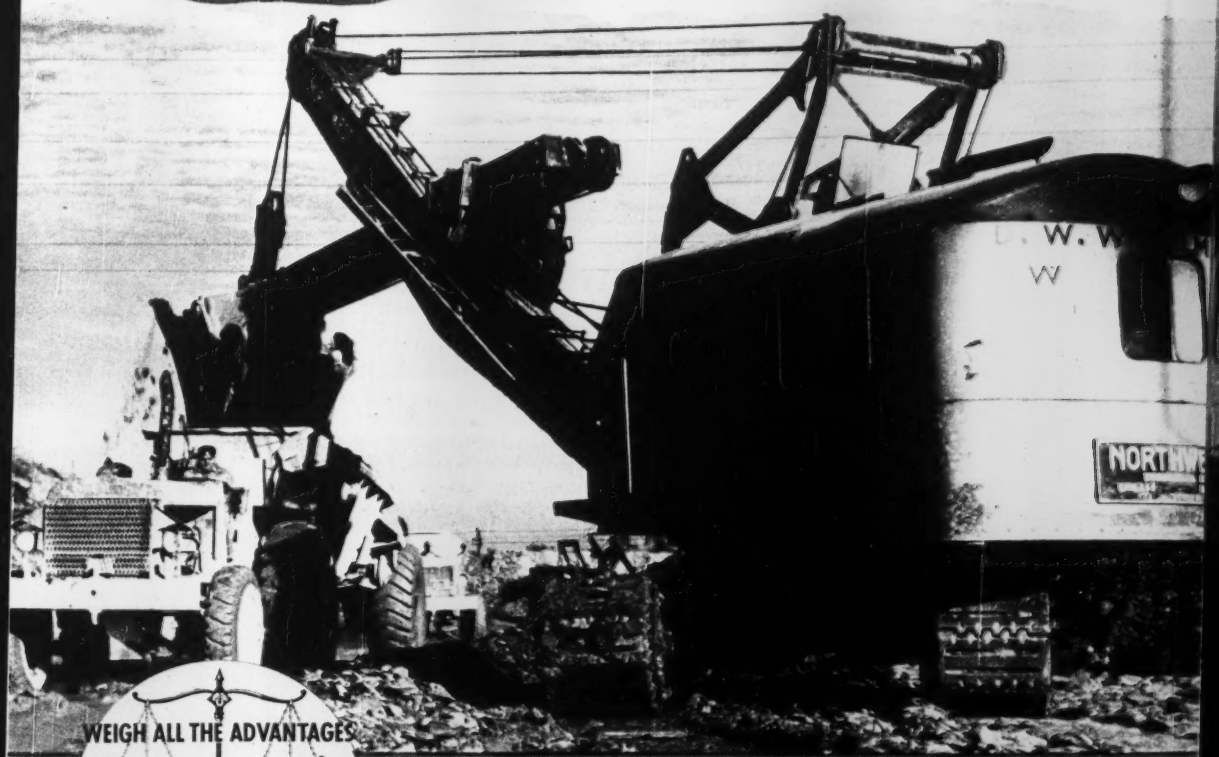

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WHETHER SHOVEL, CRANE DRAGLINE PULLSHOVEL or TRUCK CRANE
a star on every job!

NORTHWEST

CRAWLER and TRUCK MOUNTED SHOVELS-CRANES-DRAGLINES-PULLSHOVELS

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It's never a lucky break

BELOW—Installing the 30" Lock Joint supply line for Ciudad Trujillo in the Dominican Republic. This line, undamaged by shocks which destroyed many structures in the vicinity, gave unimpaired service throughout the severe earthquake of 1946.

RIGHT—Damage attending the rupture of a large water main in a crowded community.

ONE SLIGHT FLAW IN A PIPE may develop the proportions of a major catastrophe when an important water line ruptures in a crowded area. Utilities can be impaired, property flooded, traffic stalled, business lost, life endangered. A bad break in more ways than one, but a break which could be avoided by using Lock Joint Pressure Pipe.

Lock Joint's water-tight expansion joints built into every section of pipe provide unrestrained flexibility under back loads to accommodate not only normal ground settlement but traffic vibrations and variations in temperature. The high factor of safety assured by its time-tested design of reinforcement provides for every pipe an abundant reserve against water hammer and pressure surges. Experience shows conclusively that Lock Joint Pressure Pipe does not fail.

When planning your next water supply main—specify Lock Joint Concrete Pressure Pipe—the pipe with a proven record of safety.

SCOPE OF SERVICES—Lock Joint Pipe Company specializes in the manufacture and installation of Reinforced Concrete Pressure Pipe for Water Supply and Distribution Mains in a wide range of diameters from 16" up as well as Concrete Pipe of all types for Sanitary Sewers, Storm Drains, Culverts and Subaqueous Lines.

LOCK JOINT PIPE COMPANY

Est. 1905

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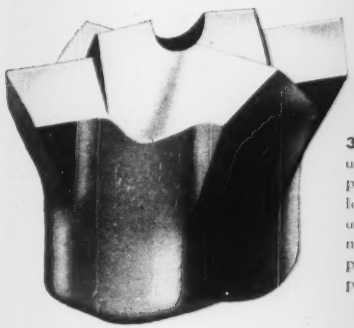
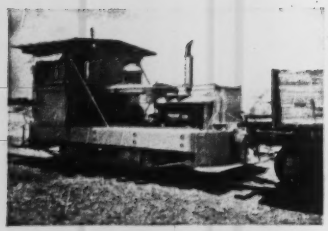
1. MULTI-USE. Basic removable rock bit for 18 years. Gives lowest cost per foot of hole when full increments of the steel can be drilled and when all bits are returned for proper reconditioning. Low cost. Requires less policing than carbide insert bits.

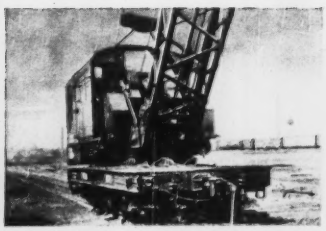
2. CARBIDE INSERT. For extremely hard and abrasive ground, small holes, extra deep holes. Lets drillers spend more time drilling—less time changing bits. Holes go down faster. Bit reconditioning is simplified.



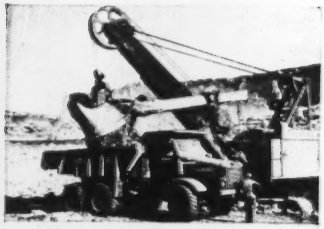
3. ONE USE "SPIRALOCK". For use where reconditioning is impractical or undesirable. Offers lowest bit cost. New "Spiralock" union holds bit dependably—permits easy removal. Simplifies steel preparation. More bit applications per drill steel.



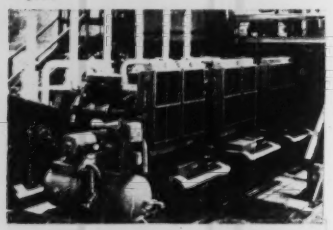
LOCOMOTIVES—Repowered with GM Diesel Torque Converter unit, this 20-ton locomotive hauls double the tonnage without ever shifting into low gear.



HOISTING—Converted from steam to GM Diesel Torque Converter power—estimated operating savings will pay repowering and overhaul cost in less than two years.



EARTH MOVING—Two 190 H. P. GM Diesel Torque Converter units give 34-ton Euclid 1-FFD rear dump a speed of 25.4 m.p.h. with full load.



DRILLING—"⅓ faster than with original engines," says owner of rig repowered with 3 GM "Twin" Diesel Torque Converter units.

LOGGING—Powered with GM Diesel Torque Converter unit, this Washington Iron Works yarder has yarded 140,000 bd. ft. per day.

WRITE FOR YOUR COPY

of 24-page illustrated catalog giving full details on design, operation and application of "The NEW General Motors Diesel Engine-Torque Converter Unit."

How to Get MORE WORK from your Equipment

Operators in every field report they get more work done in less time at lower cost with equipment powered by General Motors Diesel Engine-Torque Converter units.

The combination of a GM Diesel engine with an integrally built torque converter and fluid coupling provides a compact power unit which makes available maximum engine horsepower and torque regardless of the speed of the load. It delivers high torque for starting heavy loads and *automatically* shifts to fluid coupling when load requirements equal engine torque. Gear shifting is cut to a minimum—often eliminated. Smooth transmission of power through a fluid, protects both engine and driven machinery from sudden shock loads—prevents engine stalling under any load condition.

These efficient Diesel Engine-Torque converter units are available with 3-, 4-, and 6-cylinder engines, Twin 4 and Twin 6 multiple engines, rated at 64 to 294 B.H.P. See your GM Diesel distributor or write us for further information.

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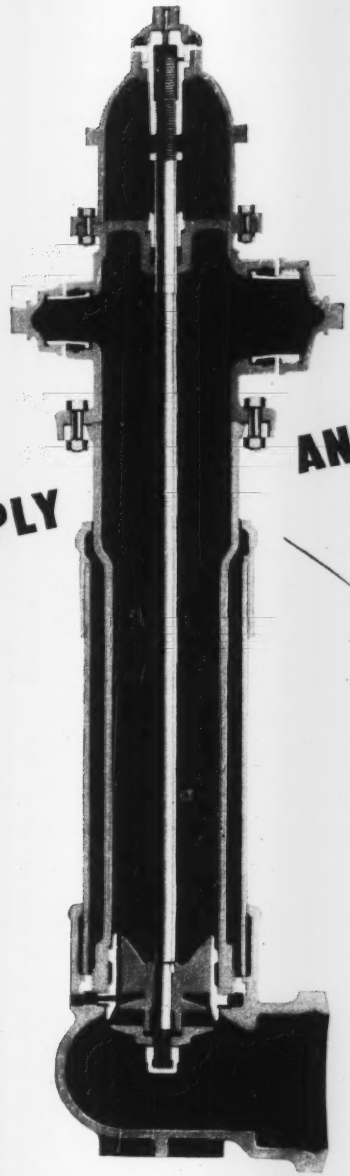
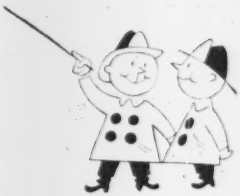
GENERAL MOTORS

GM GENERAL MOTORS DIESEL POWER

DIESEL BRAWN WITHOUT THE BULK



SIMPLY AND SOUNDLY CONSTRUCTED



Simplicity of construction pays off in dependability and ease of maintenance.

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STANDARD ENGINEER'S REPORT

DATA

LUBRICANT RPM Delo Oils

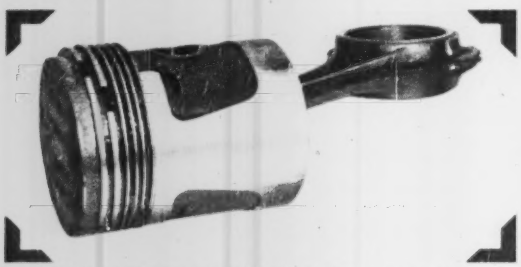
UNIT 1½ ton truck – 6 cyl. Ford – Model F5 engine

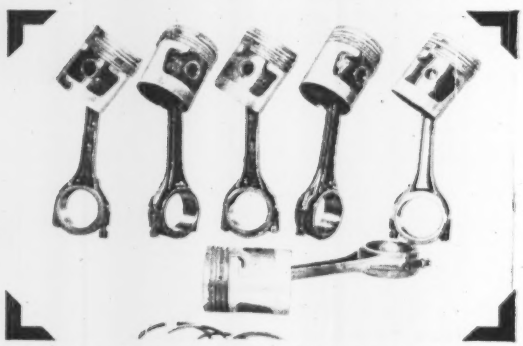
CONDITIONS Low engine temperatures – City deliveries

PERIOD 2 years

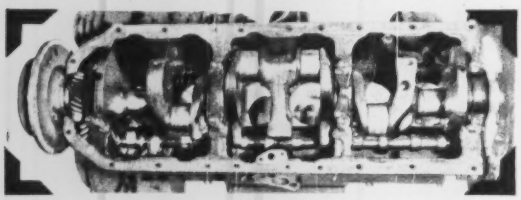
FIRM Pacific Cheese Division of Bordens, San Francisco Cal

Only 0.004 inch wear in 68,740 miles stop-and-go driving!





LUBRICATED WITH RPM DELO SPECIAL OIL, these pistons from an engine overhauled for the first time after two years and nearly 70,000 miles of tough delivery-service operation, had no broken or stuck rings. Grooves were clean and all oil-return holes open. All bearings, including mains, were in good condition. Reboring of the cylinders was not necessary because none of the six cylinders was out of round and taper ran only 0.004 to 0.0045 inch.



THE ENGINE WAS EXCEPTIONALLY CLEAN as this picture indicates. Cylinder walls were free of lacquer and there were no deposits in valve chambers. Only a thin carbon film was in the bottom of the pan. Valves, pistons, bearings, all parts except rings, were put back in service.

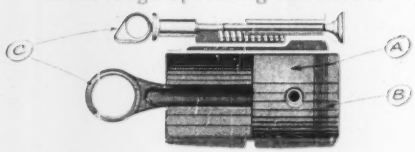
REMARKS: This engine was used in Sacramento under widely varying temperatures. Its stop and go operation seldom allowed engine temperatures to reach normal. There is an RPM DELO Lubricating Oil to meet every heavy-duty engine operating condition.

NOW...
You can cut engine wear rate as much as 85%

FREE BOOKLET on the RPM DELO Oils gives you complete information. Write or ask for it today.

RPM DELO LUBRICATING OILS

How RPM DELO Oils meet tough operating conditions



A. Contain special additives that provide metal-adhesion qualities...keep oil on parts whether they are hot or cold, running or idle.

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C. Special compounds stop corrosion of any bearing metal, and oil foaming in both wet and dry sump engines.

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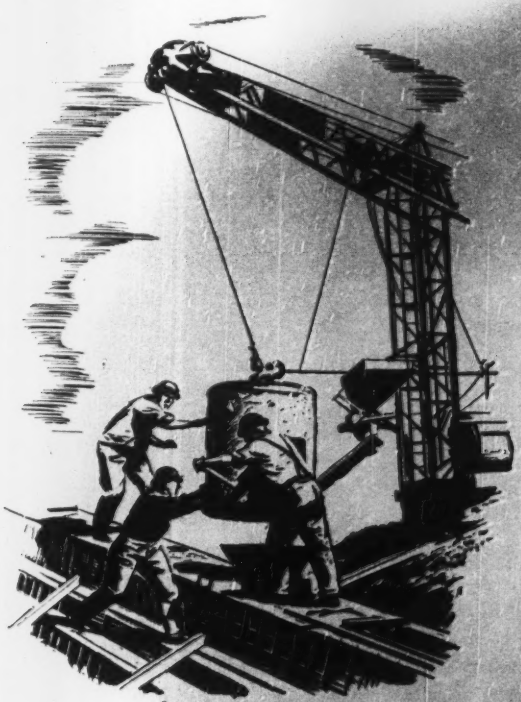

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Roebling Preformed Lang Lay "Blue Center" Steel Wire Rope lasts longer; brings fewer shut-downs; cuts down replacement time; saves wire rope dollars.

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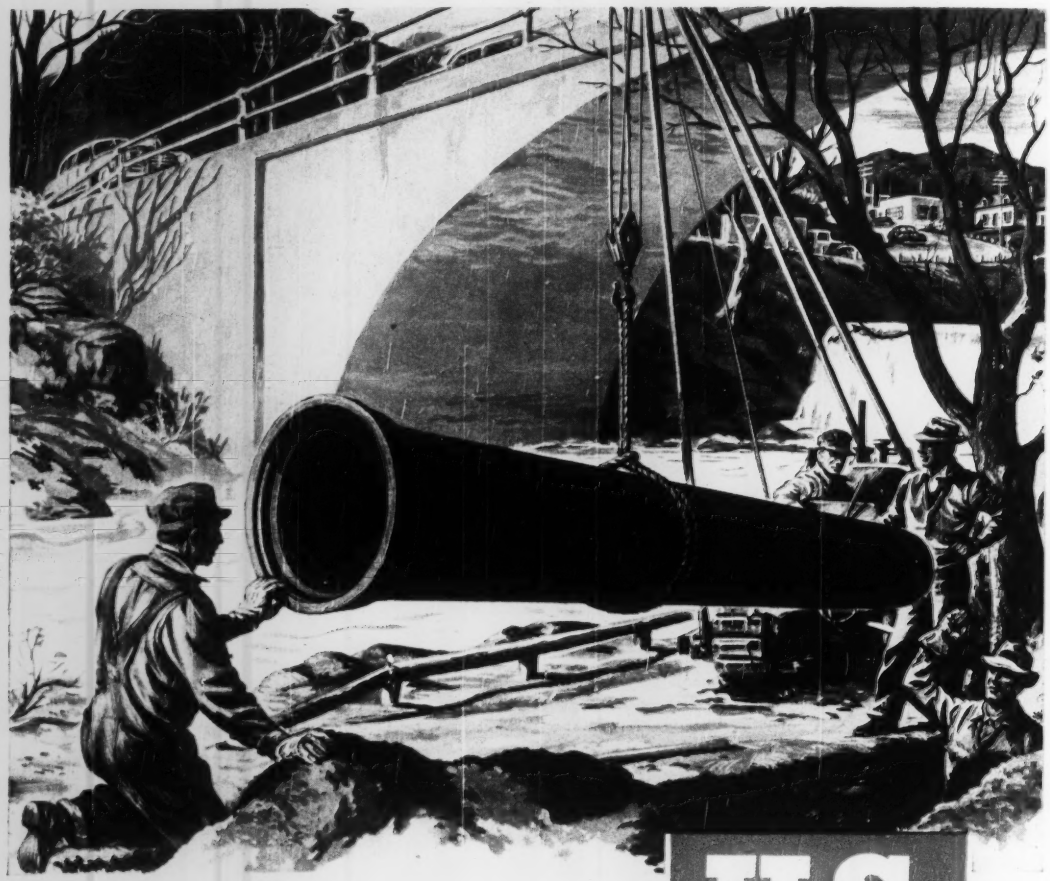
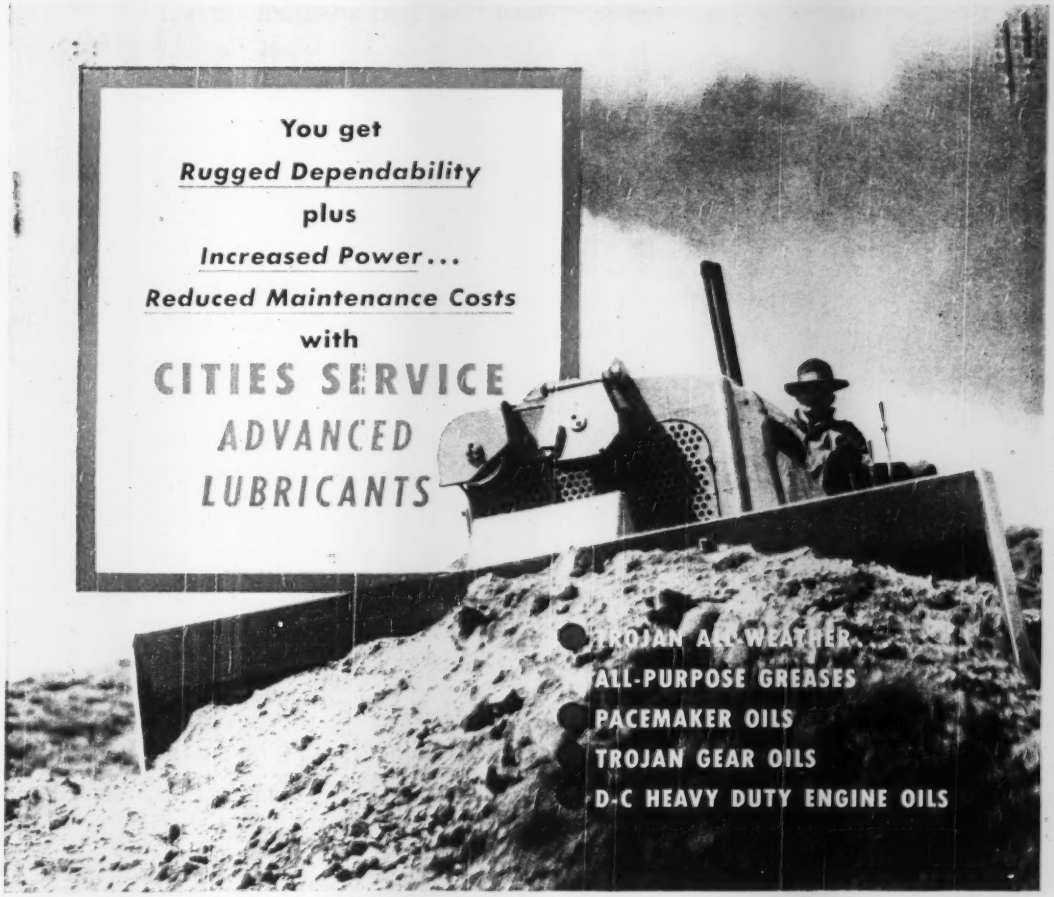


Painted for U. S. Pipe & Foundry Co. by Paul Laune

U.S. cast iron PIPE

FOR WATER, GAS, SEWERAGE AND INDUSTRIAL SERVICE

IMAGINE that you have just heard about cast iron pipe for the first time! Would you not be eager to buy some? For what other pipe material used in constructing underground mains is as inexpensive to maintain? What other pipe material has a proved service record of over 100 years in city streets? What other pipe material has all the strength factors of long life that should be required of pipe to be laid in city streets? Our product has lived up to the best traditions of cast iron pressure pipe for 51 years. **United States Pipe and Foundry Co., General Offices: Burlington, New Jersey, Plants and Sales Offices Throughout U. S. A.**



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NEWS BRIEFS

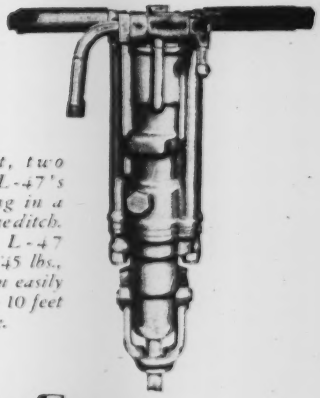
Record?—A crew working for Ben C. Gerwick, Inc. San Francisco engineering and construction firm believes it has set a new world's record for pile driving. In one 8-hour shift one foreman, four pile drivermen, one operating engineer and two firemen drove 144 timber piles in construction of an effluent channel for the East Bay Municipal Utility District sewage treatment plant in Oakland, Calif. Piles were 30 to 35 ft. long, 13 in. min. butt dia., 8 in. min. tip dia., and were driven in clay and lenses of sand, with a final penetration of 10 ft. into firm clay.

Flood control—The Canadian Government and the provincial government of British Colombia, have made an agreement to undertake a flood control project in the Okanagan Valley at a cost of $2,417,259. The project will be completed by April, 1955, and the cost is to be equally divided between the two governments.

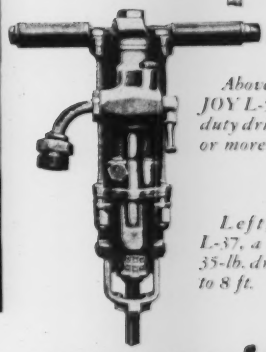
White elephant?—So far, the off-street parking garage recently constructed at Lincoln and Essex streets, Boston, Mass., in the down-town section, appears to be something of a white elephant. Ten bids for the right to operate the project have been rejected by the city. The highest bid refused by the Boston Real Estate Commission was $68,000 annually. Bidders failed to include a bond guaranteeing their year's rental. The garage is a part of the city's $5,000,000 off-street parking plan.

In suspense—A project to link San Fernando Valley and downtown Los Angeles by overhead monorail transportation moved a step further as corporation papers were filed, with initial capital stock of $100,000, by the Southern California Monorail and Transit System. The line would be an overhead carrier rail supporting passenger cars of a design not yet specified.

More rainmakers—San Bernardino County, Calif., will begin firing silver iodide into clouds Nov. 1 in an attempt to raise winter precipitation throughout the Santa Ana River basin. Thus far, 60% of the required $50,000 to keep the operation going until April 15 has been subscribed by various cities in the county. Fifteen irrigation companies, representing 90,000 acres in the river basin, are leading the



Left, two JOY L-47's working in a pipe-line ditch. The L-47 weighs 45 lbs., and can easily drill to 10 feet or more.



Above, the 55-lb. JOY L-57, for heavy-duty drilling to 15 ft. or more.

Left, the JOY L-37, a hard-hitting 35-lb. drill for depths to 8 ft.

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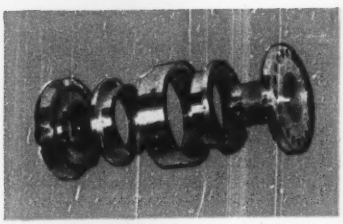

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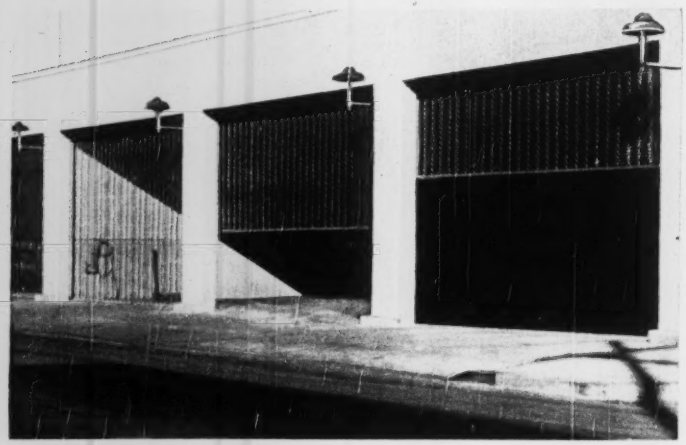
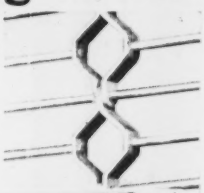


Kinnear Steel Rolling Grilles

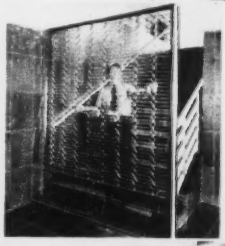
For Windows, Doorways, Corridors



This all-metal barricade guards any opening with a curtain of rugged steel rounds and links. Yet it doesn't cut off light, doesn't block vision, doesn't impede ventilation. It can be lowered into place or raised out of the way in a matter of seconds. It offers convenient protection without loss of architectural beauty. As the pictures here testify, it's the ideal way to prevent trespassing in areas where the public assembles, or wherever it is desirable to block off certain sections of a building.

Kinnear Rolling Grilles open straight upward and coil into a small, out-of-the-way space above the opening. No usable floor or wall space is wasted. In many installations, the mechanism on which the Grilles coil when opened can be concealed within the lintel construction.

Kinnear Rolling Grilles are made to fit any size window, doorway, corridor, stair well, elevator shaft or other opening. They can be equipped to operate manually, mechanically (by chain or crank) or electrically. Easily installed in old or new buildings. Write for complete details.



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campaign. Engineers have estimated that with cloud-seeding rainfall over the 2,600-sq mi watershed will increase from 30 to 50%.

Want cross-state road—In Kentucky a 21-county association has been organized to promote a through-numbered highway from the mountains to the Mississippi River along the state's southern border. The proposed route passes by or near many of Kentucky's outstanding scenic and historic spots, including Mammoth Cave.

Is there any smog?—The Los Angeles City Council has kept its rejection score perfect by refusing still another site for a proposed municipal incinerator. This time—a location in the West Los Angeles area was turned down by the council, which hasn't approved a single proposed incinerator site in the metropolitan Los Angeles area since $2,100,000 in bonds for the incinerators was approved by the voters more than two years ago.

Sky Sewer—Los Angeles smog isn't carried off by prevailing winds because of inversions (stagnant air strata) impenetrable to lower, polluted air, according to Irving P. Krick, West Coast meteorologist. His solution: Pump smog through tunnels to hilltops, then blow it up through tall (maybe 600-ft) stacks that pierce the inversion layer.

No help to bathers—The Massachusetts House of Representatives has killed legislation that would have authorized a $2,000,000 bond issue for the development of public beaches, including one operated by the state at Salisbury. This bill had been substituted for an administration measure calling for the establishment of a new division of public beaches in the Department of Conservation. It carried a proposed appropriation of $150,000 to start operations.

Freight cars needed—New England's construction industry is feeling the effects of a shortage of freight cars. While a big percentage of Boston's lumber comes by water, other sections of the New England area depend upon the railroads for their lumber supplies. Lumber manufacturers on the West Coast, whence most of the big lumber comes, have been facing one of the worst freight car shortages in their history, partly due to military requirements. It is thought that this shortage is bound to affect New England's lumber supply before long.

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- *for* GUARANTEED *construction*
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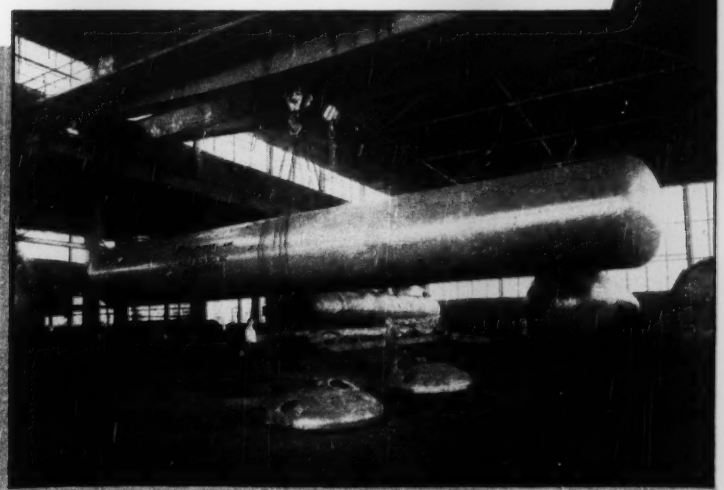
It pays to find out how Posey "stacks up" on stack jobs. Write today for free bulletin.



This 50-ton crane (27-foot headroom) allows quick, easy handling of sizeable units like this butane tank. Addition of equipment like this has been a feature of Posey Iron Works production expansion.

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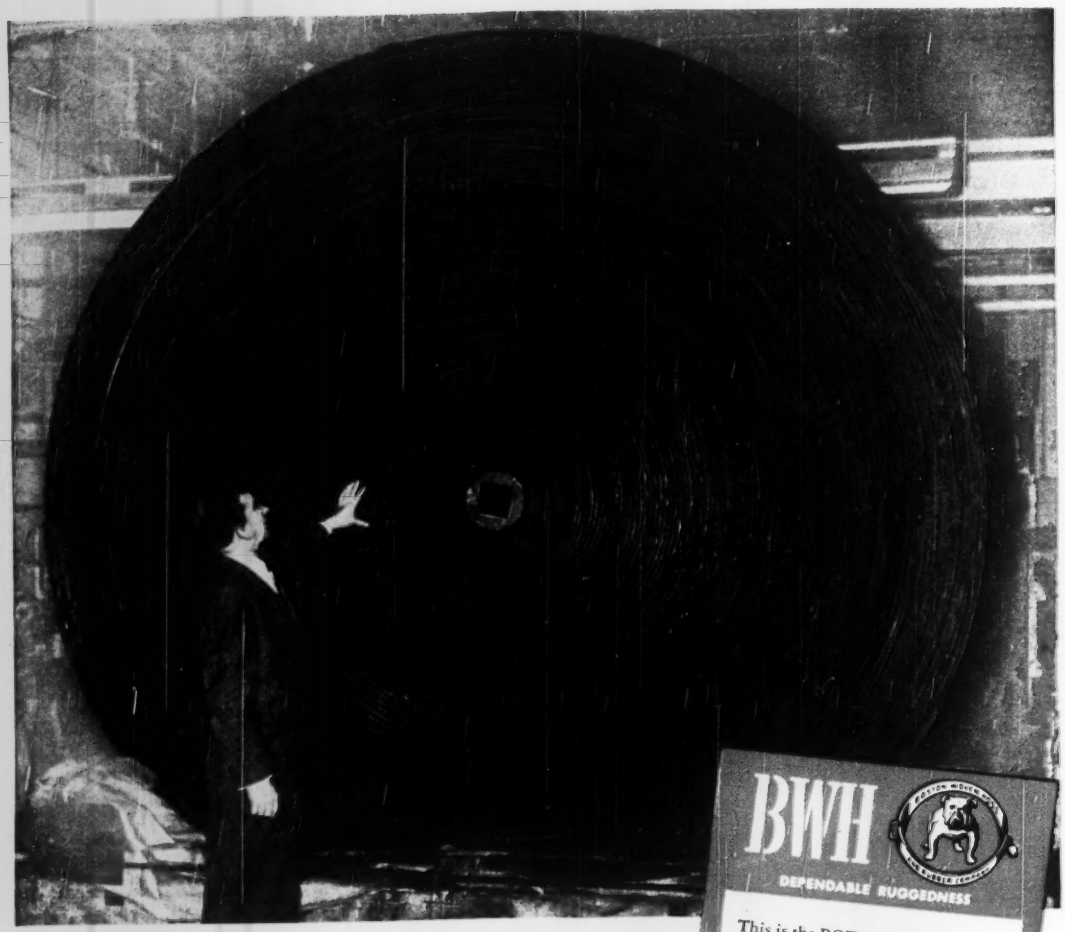

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THE CONSTRUCTION WEEK

WHITHER UNION MEMBERSHIP?—One of the sidelight results of Korea and the mobilization program may be an increase in union membership. Most labor observers figure that the union movement (estimated total membership: Somewhere between 14,000,000 and 16,000,000) reached its peak about 1947, and has been barely holding its own since then. Losses (particularly to CIO) when the big shipyards and other war industries shut down, plus an increasingly hard core of workers who just aren't interested, have about balanced any gains of new workers. But, with a war economy coming up, the experts look for a new influx of workers into the union ranks—and, more importantly—for a softening in the attitude of many white-collar workers, who remember they didn't fare too well in comparison to other workers in the war years.

CONCRETE FOR MAINE?—Impressed with recent advances in concrete manufacture, the Maine State Highway Commission is said to be ready to reverse a long-standing policy and call bids for concrete highway paving. For many years the state shied away from concrete paving, because tough Maine winters broke down concrete paving faster than any other surfacing—or so commissioners believed. New cement components, promising a concrete that won't chip and crack under severe winter weather, have prompted the commission to consider a few stretches of such pavement as an experiment.

NOT MUCH—YET—Construction activity for the rest of 1950 isn't going to be much affected by the mobilization program outlined up to mid-August. Say the experts: Only slight curtailments of peacetime construction activity will be necessary—unless war spreads beyond Korea, or outside troops come in there to help the North Korean forces now engaged.

INFLATION DUE—Washington seems thoroughly agreed that your dollar will be worth less by the end of the year than it is today—that the cost of living and of doing business is on the uptrend and will continue there for a while. The politics of the situation favors inflation: The Administration feels it wouldn't be too bad, if we could only keep on with booming business, plentiful jobs, high wages, good farm prices. The belief is that Truman's advisers want to manage the boom—not choke it off. They think they can do this by using selective controls—allocations, consumer credit, price-wage fixing, rationing. They'd rather do that than resort to unpopular control by real restrictions on credit and too-heavy taxes.

POWER PROGRAM EXPANSION?—Another odd result of swift mobilization developments came to light: Interior department officials are studying an expansion of the agency's power program as a result of Secretary Chapman's directive about cutbacks (ENR Aug. 24, p. 23). What's under study is this: Which projects now under construction could be speeded up if it's decided that more federal power is needed; what new projects could be urged as contributing to defense. An example is approval of the Eklutna project for Alaska (ENR Aug. 17, p. 28). The backing for the expansion study is contained in Chapman's directive, which included the statement that power construction "will be continued undiminished . . . because of direct connection with the national security."

SITUATION NORMAL—Building materials prices have been rising slowly—but the rise shouldn't be attributed entirely to Korea, according to W. D. MacDonald, regional director for labor statistics at Boston. MacDonald insisted that continuing heavy public demand for housing, plus rising wages, is responsible, pointing out that the general rise is traceable to the beginning of the year, shows no significant spurts since Korea.

REAL BATTLE—Heated differences between House and Senate over the Army Civil Functions bill almost led to physical combat in the conference committee on the Omnibus Appropriations measure. Only cooler-headed colleagues prevented Chairman Kenneth McKellar (aged 81) from assaulting Rep. Clarence Gannon (aged 71) chief of the House group. Gannon and his group were standing firm for the House-sponsored cut of $200 million below budget estimates. They aimed scorching comments at the Senate's move for a $132 million boost above what the House wanted —particularly in the matter of unbudgeted projects that the Senate had added.

MANPOWER POLICY—There's a new statement due from the White House on deferment of skilled workers who are members of armed forces reserve components. The statement is now being prepared by the National Security Resources Board, cooperating with Defense and Labor departments. The idea is to reconcile civilian and military demands, if possible. Present defense policy is to defer a reservist only if he is "engaged in a critical occupation necessary to a highly essential activity," and he will be deferred only until he can be satisfactorily replaced. Unlike the draft, dependency is not a factor in recalling a reservist—but consideration will be given in hardship cases.

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It not only meets but exceeds the minimum standards set up by ASTM A305-49. Its proper ratio of bearing to shearing area provides greater bond between the steel and concrete thus providing more efficient transfer of stress at splices and reducing the size of tension cracks. This means a more efficient and better looking structure.
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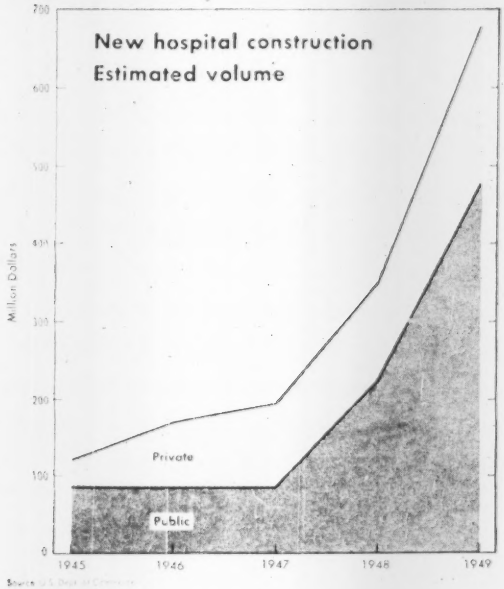
CONSTRUCTION TRENDS



Source: U.S. Dept. of Commerce

BOOMING BUSINESS IN HOSPITALS

Will the boom in building hospitals go on?

Hospitals, historically, have been only a small part of total construction. But, since 1940, the dollar volume of work in private and public hospital and institutional work has increased six-fold. That is probably faster than any other class of construction has advanced.

Private and public hospital construction this year is expected to total about $870 million. That's more than 3% of the total volume of new construction as forecast by the Department of Commerce.

Korea, however, may result in a slow tapering off in hospital building. Restrictions under the mobilization program probably will not affect more than a small part of the work planned for this year. But they could cut into next year's volume.

Outstanding in the hospital construction picture is the fact that public financing dominates the field. During the 1930's, about two out of every three hospital construction dollars came from public sources. That marked a gain from the 1920's. Federal aid programs during the depression years brought a sharp rise in public financing.

During the last 10 years, private financing of hospitals has gained markedly. From a level of only $33,000,000 a year in 1940, privately financed hospital construction jumped to $202 million last year. But meanwhile, publicly-financed construction has risen from $54,000,000 to $477 million.

Greatest gains in volume came in 1948 and '49. Hospital construction gained 79% between '47 and '48 and jumped again 95% the next year. It was this skyrocketing, in both public and private building, that brought this class of construction up to its present impressive level.

Will hospital work go on at anything like this level? Prospects are that it will. According to economists of the former Federal Works Agency, the nation's needs for hospitals total $8.5 billion. That's outside of the backlog of federal veterans' hospitals. Only requirements for highways, schools and sewer and water facilities were estimated as larger than for hospitals.

Moreover, the accelerating trend of hospital construction is in itself an indicator of importance. Hospital work has gained far more rapidly in the last few years than has highway work, for example.

At the beginning of this year, President Truman's budget message outlined estimated expenditures for veterans' hospitals at $254 million and expenditures under the Public Health Service Hospital aid program at $136 million.

True, the veterans' program will taper off. It is expected to be about 75% complete at the end of this year.

But the federal aid program was expected to maintain hospital construction at a high level for years to come. The program, authorized in 1947, first allowed the federal government to contribute one-third of hospital construction costs. Recently, however, the share was raised to two-thirds. That was expected to speed up outlays for private and state and local government hospital construction.

The Public Health Service itself has a big backlog of hospital construction work. At the end of May, the Service had 1,340 projects in its programs. Only 6% had been completed. About 54% was under construction. Some 40%, or more than 500 projects, had been approved but not yet started.

How all this will be affected by the mobilization program is not yet clear. The President has requested all federal agencies to review their construction programs. But the agencies won't abandon their construction work. In fact, many of the jobs—power programs, some roads and probably hospitals among others—will get priorities as essential construction.

There may be some slowdown in building private hospitals. But, with the huge needs for hospitals, it is likely that both the federal agencies and state and local governments will put them high on their list of essential work. Certainly, they'll come well ahead of most types of public works.

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NEWPORT NEWS

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Construction Cuts for Defense

THE EFFECT that defense preparations will have on next year's volume of construction is still pretty vague. Yet each day that passes adds evidence that the reduction below this year's high level will not be great.

The latest straws in the wind come from Congress where highways, dams and flood control are being measured for appropriations. Substantial cuts are being mentioned in connection with federal road aid, but in most cases these cuts merely apply against previously proposed increases. They are not yet deep enough to suggest less road work next year than this.

Criteria for cutting Reclamation and Army Engineer work have been drawn up, which, if ruthlessly applied, could effect a 20% reduction. But they won't be applied, even as conscientiously as the agencies themselves would do it, because individual Congressmen will bring irresistible pressure to bear in favor of a good many questionable projects. Considering the high priority given to power projects, the reduction in federal river work is not apt to exceed 10%.

What will happen to private and to state and municipal construction is more difficult to estimate. Availability of materials and the level of costs are the prime influencing factors. However, if the military estimates are right, and only 4% of the country's steel capacity is going to be required to fill defense needs, the material situation is not as critical as it was believed. And if costs can hold somewhere near present levels, the feared inflationary deterrent may not develop.

On the basis of present facts and trends, therefore, the construction cuts for defense are not going to be deep. The requirements of the limited mobilization program, it would seem, can be carried by the current economy with a little straining.

Secondary Road Funds Cut

PRESIDENT TRUMAN had all the logic on his side when he asked Congress to cut back the amount of money authorized for secondary road work in the current highway bills. The Senate bill was particularly bad as it carried a provision that the money authorized for secondary roads must be used on county roads. That was put in the bill for political purposes before world conditions became as critical as they are today.

Spending federal money on secondary roads at any time is questionable practice; certainly it cannot be justified at a time when all unnecessary public work is being cut to release men, equipment and materials for the defense program.

The Senate's initial refusal to meet the President's request may only have been a gesture designed to impress the politicians back home who wanted the money for county road work. However, it could hardly impress the rest of the country with the Senate's seriousness of purpose. There is so much road work that must be continued during this period of emergency that the Senate might better have made sure that this needed work could go ahead by quickly cutting all less important items out of its highway legislation. What is needed now is enough federal aid money to assure that work on the main national road net will not be slowed down but rather accelerated.

Civilian Defense Planning

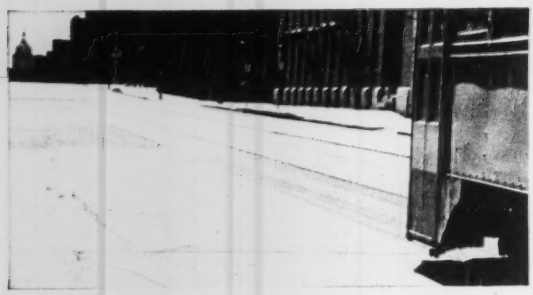
THIS NATION has no approved plan for protecting civilians against air attacks of any kind, atomic or otherwise. The National Security Resources Board, which has been responsible for civilian defense since March of last year, is said to have a plan that is to be made public Sept. 8 at the meeting of the Council of State Governments in Chicago. It was prepared by the board's Office of Civilian Mobilization.

Another plan has been prepared by the Defense Department. It places on the army, navy or air corps responsibility for maintaining proper contact with civilian agencies in carrying forward specific parts of the program where cooperation between the military and civilian agencies is necessary. Of special interest to the readers of ENR is revival of field studies by the Corps of Engineers of the effect of bombs on structures. Also, the corps has initiated a study of the design of underground industrial plants.

Meanwhile, Congress is getting concerned over the lack of an approved program for civilian defense, hence it can be expected to come up with something very soon.

The significance of all this confusion in Washington is that local planning must go forward for a time at least without any overall guidance and coordination from agencies of the federal government. Many states have already started their planning and have set up directors with authority to draft plans and coordinate the activities of municipalities and other local organizations.

As an example, Gen. Lucius D. Clay, head of New York State's civilian defense activities, has enlisted the aid of the state's construction contractors and the State Public Works Department to plan for the best use of equipment and know-how in a major emergency. In the far west, plans are being made to handle mass evacuations from exposed coast cities. At this rate, by the time Washington catches up with the states, much of the basic planning will have been done. It is to be hoped, however, that the NSRB plan will furnish the states with the overall guidance that is so badly needed. Otherwise time and money will be wasted, and neither is expendable.

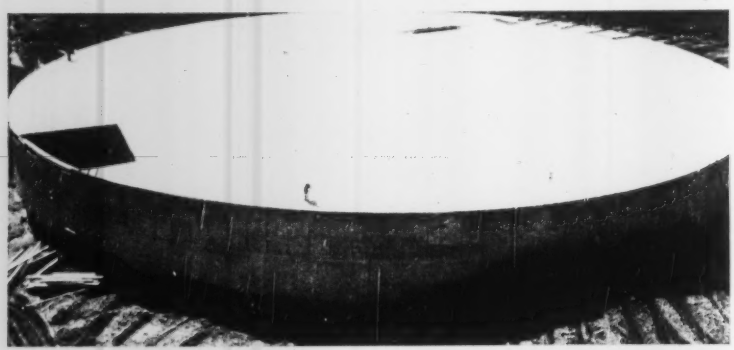


Ten Years Ago...

A Decade of ATLAS DURAPLASTIC AIR-ENTRAINING PORTLAND CEMENT

this test paving was laid in Minneapolis—the first commercial use of Atlas Duraplastic air-entraining cement. Badly scaled background section was made with regular cement. Foreground concrete was laid at the same time with Duraplastic cement. Here are both sections, photographed ten years later, after ten severe winters, heavy applications of de-icing salts and many freezing-thawing cycles—convincing proof of Duraplastic concrete's lasting durability. Longitudinal structural crack shows some raveling. Note perfect transverse joint.

Today... A typical report says: "DURAPLASTIC*... highly resistant to the effects of freezing and thawing"



7,000,000-gallon Water Reservoir, South Bend, Ind. Contractor: Thomas L. Hickey, Inc.; Duraplastic ready-mixed concrete, Kuert Concrete, Inc., both of South Bend.

The contractor on this 1000-cu. yd. concrete reservoir built exclusively with Atlas Duraplastic air-entraining portland cement reports:

"... walls have a pleasing appearance with smooth texture and no 'honeycomb' spots or streaks. We particularly like Duraplastic for structural concrete, especially if it is exposed to the weather. Duraplastic concrete is highly resistant to the effects of freezing and thawing..."

This report is typical. For Atlas Duraplastic air-entraining portland cement has proved its advantages in a wide variety of structural and mass jobs: foundations, walls, columns, and floors. It's ideal for slip-form, gunite and other uses. It requires less mixing water for a given slump; gives a more plastic, uniform mix; places and finishes easily.

Atlas Duraplastic complies with ASTM and Federal Specifications, sells at the same price as regular cement, calls for no unusual changes in procedure.

Send for free new booklet, "A Decade of Atlas Duraplastic Air-Entraining Portland Cement." Write to Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Building, New York 17, N. Y.

Offices: Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.

*"Duraplastic" is a registered trade mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

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ENGINEERING NEWS-RECORD

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New York road defense plan enlists contractor assistance

State already has man-machine-material inventory 90% complete; will maintain list with AGC help; announces highway, water-supply defense plans

New York state has sprung quickly to action in civil defense plans for its public facilities, notably roads.

Last week officials of the State Department of Public Works met with the New York State Chapter, AGC, in Syracuse to complete plans for keeping the state's highways open in case of atomic attack. The state already has 90-percent-complete information on the amount and location of construction men, equipment and materials that could be put to work clearing roads at short notice. Clearance work would be directed by a public works department committee of seven men, backed up by the department's ten district engineers.

Purpose of the DPW-AGC meeting was to establish a reporting procedure to enable the state's committee to keep its man-equipment-material inventory up to date. The reporting, probably on a 30-day interval basis, will be administered by a seven-man AGC committee, with the assistance of ten more AGC men located in the ten state highway districts. Actual information on location and quantities of materials, moves of men and equipment, will go from AGC district representatives to DPW district offices, for transmission to the central DPW committee at Albany.

The organization for keeping roads clear already is in existence, having been established with the aid of the initial inventory within a period of 30 days after Gen. Lucius D. Clay, chairman of the state's Civil Defense Commission, directed the DPW to set up a system. The system includes a working force of 50,000 skilled men who have been organized into working teams throughout the state.

• **How the plan works**—The organization is based on the existing state, county and city public works departments, augmented by specialists from private concerns. These specialists include bulldozer operators, welders and blasting experts. Small crews are ready in local areas; major construction units will be on call in each of the department's ten districts; and a special team, equipped to repair large bridges, will work out of state headquarters at Albany.

Under the civil defense program, the department is responsible for blasting, cutting and bulldozing debris from highways, and for repairing roads, bridges, drains, canals, and other facilities.

To handle the task, the department must keep a running inventory of existing facilities and of construction factors. It is in keeping up the inventory that the AGC chapter plays its vital part.

Maps of all roads and waterways, giving load limits, clearances and other data are being prepared for use in planning detours and repairs. Inventories are being prepared by districts of brick, concrete supplies, wire rope, piles, trucks, etc.

Upon notice or warning of an attack on the state, 24-hr alerts will be maintained at the headquarters of the ten districts and in Albany. Through this organization it is planned that information from county and city departments and from other branches of the civil defense organization can be coordinated, so that an over-all plan will keep main arteries of traffic open under any emergencies.

Barnard A. Tetevc, director of the department's Bureau of Research and Statistics, is chairman of the state's committee. Chairman of the corresponding AGC committee is Roscoe C. Holmes, of Holmes and Murphy, Orchard Park, N. Y.

• **Civil defense and sanitation**—Meanwhile, in Albany 100 state sanitary engineers were in the midst of a three-day study of the sanitation aspects of civil atomic defense.

Studies of the two atom bomb explosions in Japan, both of which burst in air, showed relatively little damage to underground power cables and water mains, according to Stanley E. Barker, assistant director of the state health department's Bureau of Environmental Sanitation. The most extensive damage resulting from an air burst is to above-ground utilities

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ENGINEER EQUIPMENT LANDS IN SOUTH KOREA—Villagers in this South Korean port hand-built a quay so that our forces could move their first construction equipment landward from the bow of LST. Welcoming delegation stands at right.

Army civil works bill agreed by conference

House proposals cut, Senate projects added; bill's work criteria may eliminate some Senate projects

Army engineer civil works get a record appropriation for flood control, rivers and harbors in the omnibus bill agreed upon by conferees for the two houses of Congress.

But a catch in the general provisions of the same bill probably won't permit the spending of the full $680 million provided in these two categories during the current fiscal year.

The compromise that came out of conference was a victory for the Senate. House conferees accepted cuts in the Senate figures: 12½% for flood control, and 10% for rivers and harbors—without deleting 33 new projects that the Senate had added to the bill. The final total is still $55,000,000 higher than originally voted by the House.

Actually, what cuts there are correspond to entitlements that the Army engineers already had told Congress they proposed to make. In fact, the House conferees wrote into the conference report the specific criteria that the Corps of Engineers has been applying for the last several weeks in selecting projects for deferment. These same standards will continue to be enforced in appraising all projects included in the new appropriation bill.

• **Is this necessary?** Further, the conferees put into the report a requirement that no construction or planning of any new project can be started until the President certifies that the work is necessary to the war effort.

This requirement will block many of the new projects added by the Senate. At least a score of those projects had not been included either for planning or for construction in the President's budget requests.)

To assure flexibility in spending money during the present mobilization period, the report states also that the Corps of Engineers may reallocate construction funds among the projects listed in the bill, as found necessary for the war effort or for maintenance of economical construction schedules.

• **Pruning ordered.** An innocent-looking substitution in the general provisions of the omnibus bill may have considerable effect on the government's construction programs, including that of the Corps of Engineers.

The Congressional conferees eliminated dynamite-packed riders that would have required 10% cuts in funds and personnel of most non-defense agencies. But in their place, the conference inserted a general requirement that the expenditures of executive departments and agencies be pruned by $550 million, without impairing national defense.

This cut does not look too large in relation to the overall total of $52 billion in the omnibus bill. But when defense and fixed charges are excluded, the saving will have to be made out of less than $40 billion. Construction programs will certainly feel the knife.

Among other agreed-upon construction appropriations that may be partly impounded in the pruning process are these: Bureau of Reclamation, $276 million; veterans hospitals, $160 million; and federal-aid programs for highways, $853 million, and airports, $37 million. Prospective cutbacks may affect even more the commitment or contract authorizations such as $150 million for hospital aid.

In screening the Army's civil works projects will be assessed on the basis of the tentative criteria now formally a part of the conference report. (See box, cited below). The Corps of Engineers had told the committee that it could trim the program $74 million below the Senate total of $732 million. That cut was made in the conference compromise.

• **The criteria:**

"1. The project includes the development of power.

"2. The project provides industrial or municipal water supply in critical areas.

"3. The project is a dam and reservoir project where closure is under way or has been effected and should be completed to a point of useful operation.

"4. The project is an important source of waterpower.

"5. The project protects important industries or major food producing areas.

"6. The project can be completed in the 1951 working season, and where termination costs would constitute an appreciable economic loss, the work in place would be damaged if not protected and if relatively small amounts of additional work will make the project fully effective.

"7. The project involves almost entirely the movement of earth such as channel improvements or levees and does not compete in the use of critical materials.

These standards would seem to qualify for continuance of almost any authorized project in the program of the Corps of Engineers. Already, however, they have proved adequate for screening out additional work on a number of projects, principally agricultural levees, bridges, buildings and recreational facilities.

Newark truck terminal squeeze play charged

PNYA says trucking firm offers uneconomic rental to operate new terminal stymied by teamster union

The multi-million dollar Port of New York Authority last week asked a Senate committee to investigate circumstances surrounding what PNYA said were the efforts of a Newark, N. J., truck firm to obtain control of the authority's $8,500,000 Newark Union Motor Truck Terminal.

In a general news release, PNYA said it had asked the Senate Crime Investigating Committee (Sen. Estes Kefauver, D., Tenn.) to check into the activities of the People's Express Co. of Newark, and Local 478, International Brotherhood of Teamsters.

The trouble hinges, PNYA said, on a provision in Local 478 contracts with local truckers, which prohibits the transfer at the terminal of more than 5,000 lbs of freight a day (about a quarter of a truckload) from over-the-road trucks (sent to delivery trucks driven by members of local 478). PNYA said that this clause had been inserted in contracts after terminal construction started, and often had been waived by the union in the case of other terminals in the Newark area.

In any case, said the authority, the terminal was completed in the latter part of June, a staff of 83 was hired and trained, and opening was scheduled for July 12. On June 6, the release said, the Port Authority met with union representatives, and assured the union that in the operation of the terminal, the authority would observe normal contract provisions.

Union officers, however, refused to waive the contract provision limiting transfers to 5,000 lb daily.

The day before this meeting, PNYA said, it received an offer from People's Express, to lease and operate the truck terminal for a period of from 25 to 50 years, at a rental of 40 cents a square foot, on the ground that, according to the release, "the Port Authority's union difficulties make it difficult or impossible ... to operate the terminal, while People's Express has long experience with the Newark truck union and know how to get along with it."

Authority statisticians said the rental for the 240,000 sq ft building would amount to about $96,000 a year, although the terminal should make about $408,000 a year to repay its cost.

On July 13, PNYA held another meeting with the union, but did not succeed in getting the transfer provision waived. And on July 19 and 21, People's Express made further inquiry, finally saying it would be interested only in leasing the entire terminal.

How to sell services and supplies for Defense-Department construction

Engineers and equipment and materials manufacturers will deal directly with Corps of Engineers and Bureau of Yards and Docks—Simple, decentralized procedure is already in force

The 1951 demands of the Army and Navy for engineering services and construction equipment and materials will be met by contracting and purchasing procedures already in familiar operation.

There is the utmost confidence in Washington on this point. Nor does this mean that the requirements engendered by the Korean war and the President's limited mobilization order are not substantial—by last year's standards they are large indeed. What is implied is that advance planning for procurement has been done efficiently.

Definite procedures, both for the purchase of supplies and equipment and for engaging the services of engineers, architects and contractors can thus be detailed at the present time.

• **For design work**—If you want a design contract for architectural or engineering services from the Navy the place to start is the office of the Chief, Bureau of Yards & Docks, in Washington. Complete qualification records of the firm should be filed there. In contrast, if it is a Corps of Engineers assignment that is sought, the qualification data should be filed with the District Engineer's office in the area where the firm does most of its business. For firms capable of handling work in various districts, multiple filing is recommended.

A suggestion as to the type of information that should be submitted to the District Engineer offices—and probably also to the Navy—may be gathered from the following items which the Corps of Engineers lists as matters of basic concern in evaluating architect and engineer firms for a particular job:

1. Experience of the firm as a whole in the particular design field involved.

2. Training and experience in the particular type of design involved of members of the firm and of key men who will be available for the project under consideration.

3. Experience and training of other staff members to be engaged on the project.

4. Experience and ability in organizing staff and initiating and accomplishing work on schedule. Bearing on this is the present size of staff, of working space and past experience.

5. Capacity of firm to handle project with available experienced personnel. Total number of projects and volume of work that the firm will have while engaged on the proposed project must be considered with relation to the capacity of the available organization.

6. Experience in the design of the auxiliary facilities.

7. Ratings for previous architectural-engineering work for the Department of the Army.

Having such data available when a design contract is to be made, the district engineer selects a minimum of three firms to be considered for selection. If the construction value of the project is under $500,000, the district engineer selects the firm to do it. If the value is in excess of $500,000 the list of at least three firms, arranged in the district engineer's order of preference, is submitted to the Office of the Chief of Engineers in Washington for study and recommendation.

Construction contracts for the present are going to be limited to lump sum competitive bidding. Plans are ready, however, to institute construction contracts on a negotiated basis whenever this becomes necessary.

• **For equipment and supplies**—If you want to sell construction equipment and materials to the Corps of Engineers, the procedural pattern is just as definite. Right now all equipment and all materials except lumber are being purchased by the Corps' Chicago procurement office. Lumber is being purchased by the St. Louis procurement office, which also operates three regional offices at Chicago (for hardwood purchase), Atlanta (pine) and at Portland, Ore. (fir).

These two procurement offices—Chicago and St. Louis—are considered adequate to handle the increased purchases contemplated under the President's limited mobilization plan. But if and when complete mobilization should be ordered an expanded set-up is already to go. Then there would be five procurement offices—the present two plus New York, Philadelphia and Pittsburgh.

Then, too, according to the plan that Maj. Gen. Lewis A. Pick, Chief of Engineers, instituted more than a year ago, the purchasing load will be further decentralized and specialized. All construction materials will be purchased at St. Louis; all construction equipment at Chicago; mapping, surveying and special equipment at New York; utility equipment, such as wiring, plumbing and the like, at Philadelphia; and bridges at Pittsburgh.

These service offices, as a matter of fact, are now in existence, with small numbers of personnel who are devoting themselves to mobilization planning in cooperation with manufacturers of equipment and materials. Under the present Defense Department plan, the purchase of particular items for all the branches is assigned to a particular branch. For example, the Corps of Engineers buys all tractors, while the Navy Department's Bureau of Yards and Docks buys all graders. How the procurement assignments for construction equipment and supplies line up is detailed below.

Who Buys Construction Equipment and Supplies

Rock drills	C of E [1]
Wheel mounted excavators	C of E
Crawler excavators	Budocks [2]
Scrapers	C of E
Tractors	C of E
Graders and maintainers	Budocks
Self-propelled loaders	C of E
Crawler parts and wagons	C of E
Bituminous equipment	C of E
Concrete equipment	Budocks
Cement handling equipment	Budocks
Road compacting and soil preparation equip.	C of E
Jacks, and concrete forms	C of E
Demountable scaffolding	C of E
Agricultural Machinery	C of E
Crushing and screening equipment	C of E
Motor vehicles	Army Ordnance [3]
Lumber and Wood products	C of E [4]

[1] Address for C of E items, except lumber—Chicago Procurement office, Corps of Engineers, 226 W. Jackson Blvd., Chicago 6, Ill.

[2] Address for Budocks items—Yard and Docks Supply Office, U. S. Naval Construction Battalion Center, Port Hueneme, Calif.

[3] Address for motor vehicles—Detroit Ordnance District, 6301 W. Jefferson Ave., Detroit 7, Mich.

[4] Address for lumber—St. Louis Procurement Office, Corps of Engineers, 1132 Boatmen's Bank Building, St. Louis 2, Mo.

Federal civil defense plans begin to emerge

Corps of Engineers resumes tests for bomb-resistant structures; Defense announces plan; NSRB's next

One important civil defense plan already has been announced, and another will be unveiled next week. The latter will be the National Security Resources Board's blueprint for civilian defense, to be presented Sept. 5 in Chicago at a meeting of the Council of State Governments.

The former plan is that of the Defense Department. A recent directive points out that while basic national policy gives civilian agencies primary responsibility for civil defense planning, civilian efforts will have to be supported in many ways by the armed forces.

As part of the defense plan, Army Engineers now are preparing to resume explosion tests in Utah and Colorado. These tests, part of an elaborate study of the effects of enemy bombs on structures, were abandoned when funds ran out two years ago. Now the Defense Department has come up with the money to resume this work.

Although the tests will be aimed at finding types of structures needed for wartime command posts and other vital centers, the findings will be made available to civilian defense planners.

The Army Engineers already received from an engineering firm the details of two typical underground industrial plants. The work was done under contract. The information is being added to what already is known of underground installations, from German experience.

• **Defense's assignments.** Last week Secretary of Defense Johnson gave out specific assignments.

Army is to work on plans, policies and recommendations for civilian auxiliaries in anti-aircraft, military police and the development of an explosive ordnance disposal program.

Navy is to plan civilian port security, coastal, river and harbor patrol.

Air Force has the primary responsibility of operating the Civil Air Patrol, the aircraft observer system and the development of a prototype civil air raid warning system.

The Joint Chiefs of Staff is to review and coordinate plans for civil defense operations that involve more than one military service. JCS also is to advise responsible civil defense officials as to which area might be attacked by the enemy and thus point out where attention should be centered.

Munitions Board is to coordinate and consolidate technical data on protective construction of industrial plants working on military contracts. Plant dispersion problems are part of its responsibility.

Research and Development Board is to analyze Defense Department research and development programs to see what may be applicable to civilian defense requirements.

• **NSRB plan.** The NSRB plan is understood to have details on about twenty aspects of civil defense services, such as engineering, fire, police and communications. The NSRB favors dispersion of industrial plants, rather than digging in. The Army is not convinced that underground plants have no value. They point out that the Germans had 145 underground plants going toward the end of World War II, and that they even made synthetic gasoline underground. When the Security Resources Board's plan is presented to the Council of State Governments, the administrators will be told that it is their responsibility to put the plans into operation. NSRB spokesmen claim that this could be done in six months.

National AGC plans

Plans to guide state and municipal officials in organizing and training demolition clearance teams are being developed by the Associated General Contractors of America for the National Security Resources Board. The disaster groups would go into action to clear the streets and remove damaged structures in event of enemy bombing or other destruction.

A preliminary report has been made by the AGC to the NSRB, and a second, more complete report is expected after the association's board meeting that starts Sept. 11 in Chattanooga. The 110 AGC chapters and branches will form the backbone of an overall plan submitted by the contractors. A number of the state and city chapters already are cooperating on plans with local officials. Their experience will be utilized in compiling the final report.

Purpose of the plan is to make best use of contractor organizations and equipment wherever disaster may strike. The AGC has been working on the assignment since May 15. Its officers have discussed the plan and all related problems of civil defense in NSRB meetings with public works and utilities officials.

New York plans . . .

(Continued from page 23)

and structures, hence rescue units must be equipped with their own power facilities.

By valving off the relatively few damaged water mains, an A-bomb ravaged city probably could maintain a water supply, Barker said. He pointed out that scientists believe filtration or water-softening processes would decontaminate water containing radioactive material.

Classes at the three-day session were devoted to specific problems of safeguarding public water, food and milk supplies under atomic attack.

On the administrative side of civil defense in the sanitary field, New York State Health Commissioner Dr. Herman E. Hilleboe has ordered reactivation of the state's wartime plan for relief to communities suffering bomb damage to water utilities. The state's Mutual Aid for Water Service plan, designed for speedy relief to bombed areas where water facilities are disrupted, also provides for the interchange of water between adjacent communities where interconnecting piping can be installed readily, and for transfer of materials and personnel from unbombed areas to stricken communities.

Non-union contractors attack Maryland wage law

Non-union contractors have attacked the constitutionality of Maryland's new prevailing wage law in a suit filed in Circuit Court No. 2 in Baltimore, Md.

Judge Joseph Sherbow gave the Commission on Prevailing Wages until Sept. 5 to show cause why it should not be enjoined from proceeding under the law, which provides for minimum wages on all state contract work.

Four non-union contractors—the Muller Contracting Co., Colvill Construction Co., Dickerson-Young Construction Co., and Henry A. Knott, Inc.—were joined in the suit by four individual complainants and the Associated Builders and Contractors of Maryland, Inc.

Among other reasons advanced, the contractors allege that the law is unconstitutional because it is voluntary and unenforceable. However, the principal allegation is that the act was sponsored by "Employing Contractors' associations, paying union wages and the Baltimore Building and Construction Trades Council" for the express purpose of eliminating competition in open shop contracting in building the Maryland state work.

CONSTRUCTION BUSINESS

Lumber market runs wild; most prices go higher

Lumber prices are crazier still than they were just after the war—mostly up, but a few actually down and some holding at last month's highs.

Lumber production in the second quarter of 1950 was the highest in more than 30 years. But the unprecedented construction boom, the recent war demand for 1-in. material and an unprecedented railroad car and coastwise ship shortage have piled up orders faster than shipments can be made. Production has gained over shipments so far in the third quarter but orders have continued to pile up, too. Stocks are unbalanced and price rises vary dizzily by size and type of material.

In detail, a round-up of conditions shows for the twenty cities for which ENGINEERING NEWS-RECORD reports prices:

Lumber prices are still holding at their late July highs in these four cities: Philadelphia, Birmingham, New Orleans, Dallas.

Fir prices are actually down in Baltimore, to move stocks in competition with pine, although prices of the latter are rising sharply.

Elsewhere everything is up.

• **Boston** prices are up $4-$5 on pine, $10 in the larger sizes, and $5-$10 on fir, with 1-in. pine in the $91-$96 range, fir $100 to $118. Pine is $96-$120 for 2-in. stock up to 2x10s and 2x12 rough is $124, out of yard. Fir is $115-$120 including 3x12s up to 12x12s rough, asd.

• **New York** fir prices are unchanged since late July for 2x4s up to 2x10s at $125-$135 delivered. 3x12s, 6x12s and 12x12s are up $10 to $135-$145. Pine 3x12s rough are holding at $135-$150 and 2x12s and 12x12s are holding at $210-$240. But 1-in. pine is up $10 to $120-$133; 2-in. is up $5 to $115-$140.

• **Philadelphia** lumber is moving from yards as fast as received. Mostly at higher side of price range. Pine is $105-$115 for 1-in. & 2-in. material, fir $120-$130. Heavier fir is $130-$140, heavier pine $180-$190.

• **Baltimore's** suppliers in south are shipping trailer loads and picking price up by wire while load is in transit. Quality is very poor, much is unseasoned and not running uniform to grade. Pine prices are up $53.50-$60 for 1-in. to $110-$111, fir down $5.50 to $103.50. On 2-in. pine is up $12.50 to $85, fir down $1 to $105, except 2x10s, where pine is up $22 to $95 and fir is down $2 to $107. For 3x12s rough, pine is up $9 to $95, fir down $1 to $108 but pine 2x12s are down $5 to $140, 12x12s down $5 to $143, and fir 12x12s are up $3.25 to $105.

• **Atlanta** pine is up $19-$20 for 1-in. to $90 and $94, up $12 to $78-$84 for 2-in. except 2x10s and 3x12s which are up $13 to $88. Rise is due to unbalanced stocks and light mill supplies with buying heavy even at the higher prices.

• **Cleveland** lumber situation is still tight and uncertain, pine is up $20 for 1-in. boards to $115-$117, up $20 for 2x4s to $110 up $12-$17 on other 2-in. to $110-$112, fir 2x4s up $6.50 to $116.50, 3x12s, 6x12s, 12x12s up $7 to $112.

• **Cincinnati** pine is up 10% with desirable items off market and large construction timbers available for outstanding orders only. Pine is up $10.50 to $113.50-$114.15 for 1-in. and for 2x6s and 2x8s, but pine 2x4s are up $21.20 to $125. Fir is up $26.60 to $122.60 for both 1-in. and 2-in. except 1x8s and 2x10s which are up only $7 to $105.

• **Pittsburgh** pine and fir both are up $10 on most sizes to $95-$100 for pine, $100-$110 for fir, $110-$120 and $130-$140 in the larger sizes.

• **Detroit** pine is up $22-$24 to $120 for 1-in., $25 to $110 for 2x4s. Fir is up $7.50-$8.50 to $103.50-$104.50 for 1-in. and $29 to $114 for 2x4s. The Weyerhaeuser strike is over but not much material is available as yet.

• **Chicago** pine is up $17-$23 for 1-in. boards to $115-$120, fir up $3.86 to $114-$118. On 2-in., pine is up $14-$18 to $106-$117 except 2x10s which are up only $5-$4 to $110, fir is up $5-$11 to $124-$126. Prices are difficult to establish. The car shortage plagues this market too.

• **St. Louis** lumber made further extraordinary increases. 1-in. pine up $26.50-$28.75 to $132.25-$135.50, 2-in. up $13.75-$20.05 to $118.75-$135. Fir 2x4s are up $15.50 to $147.50, other 2-in. fir is up $15.50-$25.50. M to $145.50-$146.50 delivered. 12-in. fir is up $13.25-$14.75 to $144.75-$149.25.

• **Minneapolis** pine is up $10 to $130-$140 for 1-in., fir is up $5 to $125-$130 for 1-in., $130-$135 for 2-in. $40-$145 for heavier material.

• **Kansas City** pine is up $11-$13 to $125-$130 for 1-in., fir is up $7-$11 to $119-$130. For 2-in. material pine is up $7 to $132-$135 and fir is up $4-$6 to $129-$135 with the larger sizes holding at late July prices.

• **Denver** quotes no prices for 1-in. lumber which is off the market. 2-in. is up $5-$9 to $134-$136 and heavier material is up $10 to $16 to $132-$148.

• **Seattle** mill prices for Douglas fir are up $5 to $90 for all sizes.

• **San Francisco** buys from mills that are producing adequate supply but car shortages hamper deliveries. Prices at mill range from $85 to $89 for 1- and 2-in. material and $80-$85 for heavier pieces with rail freight from the Northwest $11.50-$15 for heavy stuff, from Northern California $9, truck rate $12 except for surfaced stock which is $2.85 less.

• **Los Angeles** prices for 1-in. and 2-in. fir are up $5-$7 to $108 at the yard, 3x12s up to 12x12s are up $8 to $121-$136.

Wage changes for month

All is relatively quiet along the labor front this month.

• **Chicago** has had a second round of wage increases for this year of from 5 to 15 cents an hour, granted to 6 crafts.

Plasterers will get a 5-cent raise $8pt. 4 increasing the hourly pay to $2.75; they received a 15-cent hike July 31, to $2.70. Lathers, 5 cents Sept. 4 to $2.75; their rate went up 15 cents July 24 to $2.70. Sheetmetal workers, 10 cents Oct. 2 to $2.55; an additional 5-cent raise will go into effect Jan. 1. Boilermakers, 10 cents Oct. 2 to $2.60.

Pipe fitters and plumbers, 15 cents Oct. 2 to $2.60; they recently had a 15-cent increase; pipe fitters' welfare status changes Oct. 2 from 5 cents an hour to a flat three per cent. Electrical workers' wages went up Aug. 7 from $2.521 to $2.65 an hour.

Carpenters, who recently got a raise of 5 cents an hour plus 5 cents an hour more for a welfare-insurance fund have voted against the welfare provision in favor of an increase of 10 cents, making the hourly rate $2.55 as of June 1.

• **Minneapolis** reports some over-scale payments with contractors considering adjustments for bricklayers and cement finishers.

• **Los Angeles** carpenters got court order returning them to work at old rate of $2.20 per hr but some are refusing to work. They want $2.325 and a few contractors are probably paying it. Building contractors have offered a 2.5 cents an hour increase over the $2.20 rate. Structural ironworkers are up 12.5 cents to $2.50, ornamental ironworkers to $2.40, plumbers to $2.625.

BIDS AND BIDDERS

(Major project news received after Construction Reports, page 62, went to press.)

Paper Mill—Choctaw Pulp & Paper Co. awarded contract for $40,000,000 paper mill in Naheola, Ala., to J. A. Utley Company, Detroit, Mich.

Dam—U. S. Engineers asks bids Nov. 1 on construction of Chief Joseph Dam across Columbia River, Bridgeport, Wash., for estimated $30,000,000. Col. F. C. Bichner is district engineer.

Electric and Water—Port of Spain, Trinidad, invited $20,724,000 for island-wide water project at $14,224,000 and electricity system at $6,000,000.

Utilities, Buildings—U. S. Engineers plan to construct utilities, warehouses and roads at Fort Richardson, Anchorage, Alaska, at cost approximately $16,525,000. Col. L. F. Seemann is district engineer.

Office—Prudential Insurance Company of America, Houston, Tex., asks bids Sept. 15 on 15-story, basement office building to cost an estimated $8,000,000. Kenneth Franzheim is architect; Dale S. Cooper & Associates and Ward Buttrick, all of Houston, structural engineers.

Power Plant—Alabama Power Co., Birmingham, will construct the 7th unit, steam generating plant in Georgia, Va., for an estimated $10,000,000.

Laboratory—Atomic Energy Commission, Los Alamos, N. M., awarded contract for laboratory to Utah-Lovell Company, Los Alamos, for $11,200,200.

Power Plant—Utah Power & Light Co., Salt Lake City, plans to construct a 75,000-kilowatt steam turbine-generator electric power plant at an estimated $30,000,000. J. A. Hide is chief engineer.

Communications—U. S. Engineers will build a $9,205,940 classified project dealing with communications at unnamed site in Alaska. Col. L. T. Seemann is district engineer.

Plant—C. M. Guest & Sons, Greensboro, N. C., was awarded contract for Robbins Mills, Inc., Rayon weaving plant in Richfield, N. C., at $7,500,000.

Housing Project—Municipal Housing Commission, Louisville, Ky., asks bids Sept. 12 on New South Housing Project for 75 buildings with 884 apartments. Estimated cost is $7,950,000. Fred Hartstern and Louis & Henry are architect; E. R. Ronald & Associates, all of Louisville, engineers.

Housing—Milwaukee, Wis., Housing Authority received low bids on the 724-unit Westlawn Housing Project for general construction from Kroening Engineering Corp. at $5,971,980; for plumbing from S. V. Hanley Co., $527,447; for electrical work from Migaw Electric Co., $198,000; and for heating from E. J. A. Christiansen Co., Inc., $334,680. Schiefer, Schneider, Schwartzer and Trapp, all of Milwaukee, are architects.

Sewer—Philadelphia, Pa., Department of Public Works awarded contract for main gravity intercepting sewer to Peter Kiewit & Sons Co. and Bates & Rogers, Chicago, Ill., at $3,452,814. A. Z. Zane Hettman is chief engineer.

Housing—Hartford, Conn., Housing Authority asks bids Sept. 11 on 600 low-rent housing units in 42 buildings located at Kensington St. Estimated cost is $8,000,000. Kane Fairchild is architect; Henri B. Zelig & Associates, engineers.

Plant—Dow Chemical Company, Midland, Mich., plans to construct a multi-million dollar polystyrene plant on Thames River, 10 miles north of New London, Conn.

Shopping Center—Herbert Huber, Dayton, O., plans a $5,000,000 shopping center on Far Hills Ave., between Rockhill Ave. and Lincoln Park Blvd.

Highway & Bridges—S. J. Groves & Sons, Conn. Johnstown, Pa., was low bidder on construction of divided highway, continuous-deck plate girder and I-beam bridge and reinforced concrete bridges near Meadville, Pa., at $2,775,500.

Scale Plant—Stone, Webster Engineering Corp. will build a $5,000,000 scale plant near Kansas City, Mo., for Emhart, Morse & Co.

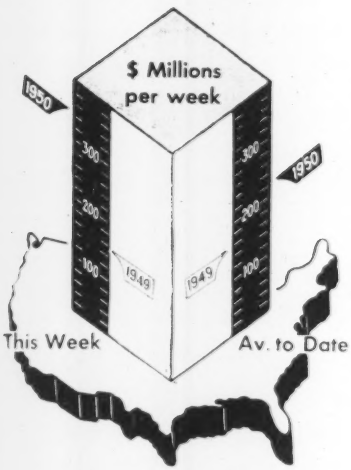
Military Housing—U. S. Air Force awarded contract for 600 housing units at Stewart Air Force Base, Smyrna, Tenn., to W. T. Holt & Sons of Nashville. Estimated cost is $5,000,000.

Housing—New Haven, Conn., Housing Authority will build a 500-unit housing project at Dixwell St. for an estimated $4,000,000.

COSTS AND VOLUME

ENR INDEX NUMBERS

Index Base = 100	1950	1913	1926	1949
Constr. Cost, Aug. 30	529.80	2562.5	165.11	
Bldg. Cost, Aug. 30	382.86	266.69	165.69	
Volume, Aug. 30	345.50	445	217	175



Activity This Week

As reported to ENR (in millions of dollars)

Amount of contracts let

Week of Aug. 24	This Week 1950	Cumulative 1950 wks.	Cumulative 1949 wks.	% change
Federal	$ 42.3	$ 881.3	$ 872.5	+ 1
State & Muni.	102.2	2,487.7	2,174.2	+ 14
Total Public	$ 144.5	$ 3,369.0	$ 3,046.7	+ 11
Total Private	222.7	4,875.9	2,541.5	+ 92
U. S. Total	$ 367.2	$ 8,244.9	$ 5,588.2	+ 48

Contracts by type of work

	This Week 1950	Cumulative 1950 wks.	Cumulative 1949 wks.	% change
Waterworks	$ 4.3	$ 150.9	$ 81.5	+ 85
Sewerage	3.6	180.4	183.8	- 1
Bridges	2.2	148.6	227.0	- 35
Highways	11.5	553.2	618.7	- 11
Earthwork				
Waterways	2.7	77.2	108.6	- 29
Buildings				
Public	37.1	1,116.2	822.8	+ 36
Heavy, pub.	7.5	190.4	204.6	- 7
Heavy, priv.	7.2	243.6	1,126.4	- 78
Commercial	22.3	668.1	193.2	+ 246
Industrial	7.0	366.2	228.5	+ 60
Residential	37.8	1,515.6	1,275.1	+ 19
Unclassified				

*NOTE: Monthly totals for projects included in Week's totals: Aug. $25,000; July $1,000; June $1,000; May $1,000; Apr. $1,000; Mar. $1,000; Feb. $1,000; Jan. $1,000; prior to 1950 $1,000; other buildings $5,000.

New capital for construction

	Cumulative 1950 wks.	Cumulative 1949 wks.	% change
Corporate Securities	$ 1,480.2	$ 1,821.9	- 19
State and Muni.	1,142.5	1,162.5	- 2
Ind'l. Financing	1,134.8	1,146.2	- 1
Housing	1,830.0	1,360.2	+ 35
Total Capital	$ 5,587.5	$ 5,630.5	- 1

Indiana Road Commission frowns on political "favors"

The Indiana State Highway Commission last week threatened immediate dismissal of employees "giving away state-purchased materials and lending the use of state-owned equipment and labor paid by the state."

The commission order followed reports that highway workers had been using state equipment and material for "friends and politicians." Commissioners estimated hundreds of thousands of dollars would be saved by enforcing political reform in the department.

The order came in a letter to workers by Maintenance Superintendent Earl B. Lockridge. It was written at the request of the commission.

In the meantime, the supreme court of Pennsylvania is considering a "free work" scandal in Pittsburgh, where the accidental death of a city employe recently revealed the alleged fact that he and others had been working at taxpayer's expense on private work for two city officials. The court is ruling on whether the attorney general or the district attorney shall conduct an investigation into this alleged misuse of city labor and materials.

County claims default; cancels school contract

Anderson County (Ky.) Fiscal Court has directed its county judge to notify May-Bilt Construction Co., Frankfort, that a $870,505 contract between the parties has been terminated.

Covering the construction of four school buildings, the contract was signed Nov. 15, 1949.

Brock & Johnson of Lexington, architects on the project, had certified that the contractor had defaulted on his contract.

An official of the contracting firm said that his company at the end of July submitted an invoice for $160,000 to Anderson County. This amount covered work "already done." "The county declined to pay, and we declined to work," the official said.

Contractors penalized

For failing to meet project specifications, two contractors on New Jersey highway work will have a total of $2,597 deducted from their final payments, State Highway Commissioner Ransford J. Abbott has ruled recently.

The check of the Kaufman Construction Co., of Philadelphia, will be reduced $2,357 because of delays in completing the Trenton Freeway, and the Perelli Contracting Co., of Trenton, will forfeit $240 for "not providing an adequate field office" in constructing Park Avenue at South Plainfield, Middlesex County.

Boston sues contractors for deficient paving jobs

Suits against four paving contractors investigated by the Boston Finance Commission have been entered by the city of Boston on the ground of breach of conditions of bond (ENR June 22, p. 30). Two other contractors were partly exonerated by public works commissioner George G. Hyland, who pointed out that while the contract requirements were not met precisely, substantial work was performed, leaving in doubt the question whether the contractor is in debt to the city. The suits named the following sums in the four cases first referred to: $150,000, $70,000, $45,000, and $75,000.

Commissioner Hyland stated that the inspectors and engineers assigned to the street projects under question were the tools (willing ones) of higher-ups in the department. In the future these men will be assigned to other than contract work. In order to close existing loopholes in the city's contract system, steps have been taken to insure proper prosecution of the work by contractors and to insure suitable inspection and engineering work on all projects.

L. A. underground garage work to begin in 90 days

Contracts have been signed for construction of Los Angeles' subterranean garage beneath downtown Pershing Square. City Park Garage, Inc., one of two bidders, will begin construction in about 90 days of the two-deck, 1,650-car parking station which also will double as a bomb shelter. It is a $3,000,000 project.

Under terms of the lease the garage must be completed by Dec. 31, 1952. After 50 years the parking facility will revert to outright ownership by the city.

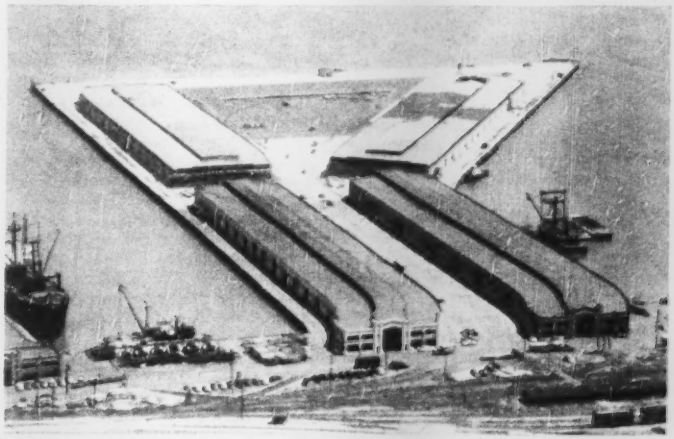
City Park Garage, Inc., agrees that the city will receive $25,000 annually, or 25% of the net income, less taxes in each instance.

A collateral contract, which guarantees the city $240,000 for the first 20 operational years, was signed by the commission with the Parking Associates Garage Corp., which will operate the facility.

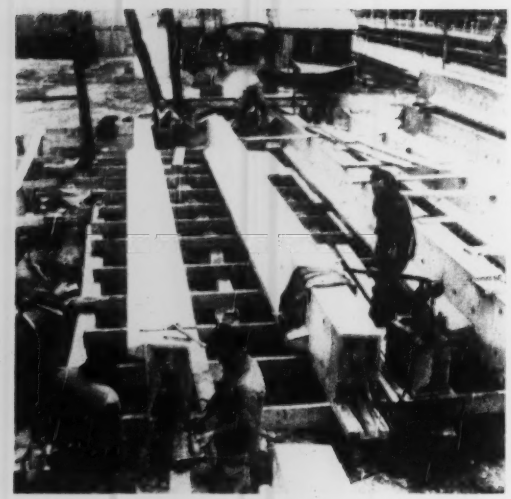
The City Recreation and Park Commission called the accepted bid the only valid offer received after several calls were made for bids. Previous offers, the commission declared, might have left the city out in the cold, financially.

Since the garage will substitute as a bomb shelter, no difficulty is expected as far as building materials are concerned.

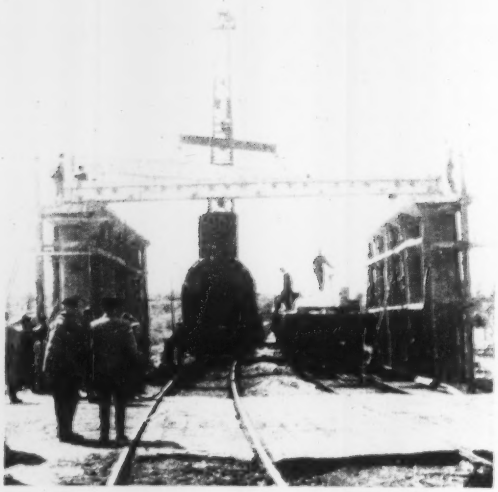
President of the City Park Garage, Inc., is Ford J. Twaits, who heads Ford J. Twaits Co., construction engineers, Los Angeles.



WE CAN USE IT—When completed this month, this wharf will be the biggest in the San Francisco Bay Area—and just in time to handle the increased traffic flowing through the port as a result of the Korean build-up. It'll berth eight ships. Its unusual shape is due to the fact that it's built over Mission Rock. Clinton Construction Co. built the substructure, Leo Epp, Inc., the remainder.



1 PRECAST BEAMS for bridge at Neufchatel en Bray, France, were prestressed with double acting jacks. Then . . .



2 CENTER SPAN, consisting of twenty-two 36-ft beams, was erected with a locomotive crane, and . . .

Cables Join Precast Beams to Form

COMPLETED LAST AUTUMN, a three-span beam bridge at Neufchatel en Bray, France, is the world's first fully continuous, prestressed concrete bridge. It was opened to traffic about two months before another noteworthy continuous prestressed bridge—a two-span structure over the Meuse at Selven, Belgium (ENR, Mar. 24, 1949, p. 29)—was completed.

Built on a slight skew, the French bridge carries a 30-ft wide highway over a small river, a double track railway and a secondary road. It consists of two 59-ft side spans and a 36-ft center span. Total width is 45 ft, and depth excluding sinusoidal curves from 18½ in. at the abutments to 23½ in. over the center span.

• **Beams precast.** Each span consists of 22 beams precast separately and prestressed to carry their own weight as simply supported beams. This prestressing was accomplished by tensioning 12-wire Freyssinet type cables (ENR Sept. 1, 1949, p. 185). Sheathed in bituminous paper, the cables had been placed in the formwork before the concrete was cast. The concrete was made with rapid hardening cement and had a 7-day strength of 6,400 psi. Four days after concreting, the cables were stressed and grout enclosed.

In constructing the central span, use was made of the railroad tracks being bridged. A locomotive crane riding on one of the tracks erected the structural members.

Beams for the side spans were cast on the approach ramps and then slid, one at a time, into position. They were supported over the span by a steel girder, which was mounted on rigers that enabled it to be moved across the width of the bridge.

Once all beams were in place, the small spaces between the flanges of adjacent beams were concreted. After this concrete had hardened, part of the transverse prestressing was carried out by the tensioning of cables that had previously been threaded through holes in the beams.

• **Prestressing for continuity.** Next, continuity was introduced in an ingenious manner through a further phase of prestressing. Blocks containing Freyssinet anchorage cones were cast between the side-span beams at a distance from the abutments equal to four fifths the span. At these points, the section at each beam changes, the compression flange moving from the top of the beam to the bottom. When the blocks had hardened, the transverse cables in these zones were prestressed. Longitudinal bitumen cables were then tensioned through the mid-span between the two changes of section.

These continuity cables transformed the three sets of simply supported beams into one set of continuous beams across the three spans. With the concreting of the space between the webs of the beams over the central part of the bridge, covering the bare cables, this portion of the structure was made of prestressed slab.

The reinforced concrete caps at the intermediate supports deepen the section of the bridge and help resist the negative bending moment at the supports. The moment is not transmitted to the columns, however, because concrete hinges (slots) were inserted between the caps and the circular, concrete columns.

As a final step, the remaining transverse cables were tensioned. The bridge was completed, except for handrails, pavements and 2-in. thick asphalt road surface. This stage was reached in July, 1949. The Selven bridge is reported to have reached a similar stage in Sept. 1948.

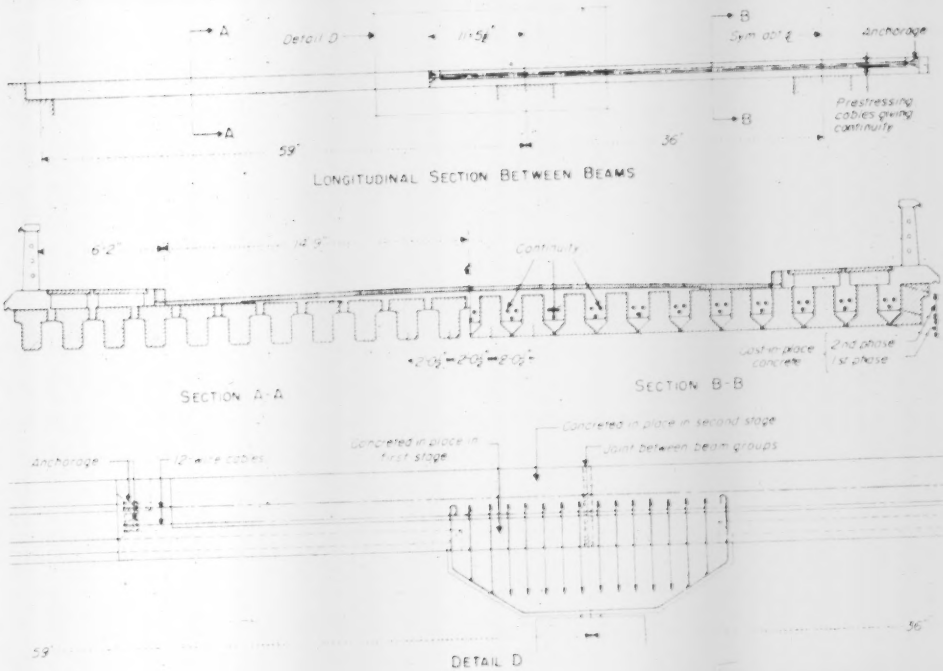
The French bridge was opened to traffic in Sept. 1949, and in November it was thoroughly tested by the French highways and bridge authorities, prior to acceptance. The behavior of the bridge in these tests, reports C. C. Stevens of the Societe Technique pour l'Utilisation de la Precontrainte, "fully justified every choice with the expected predictions."

Designed by the Freyssinet organization, the structure was built by the Entreprises Mercier of Rouen.

3 SIDE SPAN, consisting of 59-ft beams, was cast on the approach and slid into place. Finally

4 COMPLETION STAGE was reached after the beams were prestressed transversely and for continuity.

First Continuous Prestressed Bridge



5 CONTINUITY was achieved by tensioning cables and anchoring them in blocks cast between side-span beams. Spaces between beams in central portion of bridge were concreted in two stages—before and after continuity prestressing.

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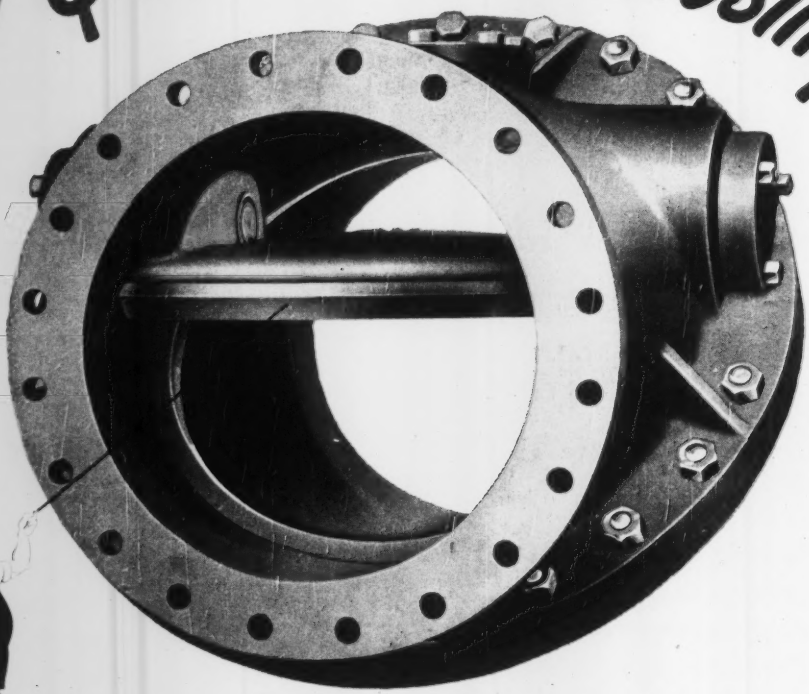

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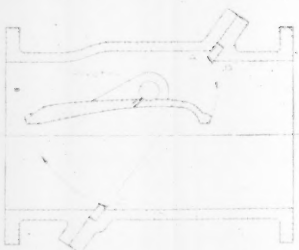
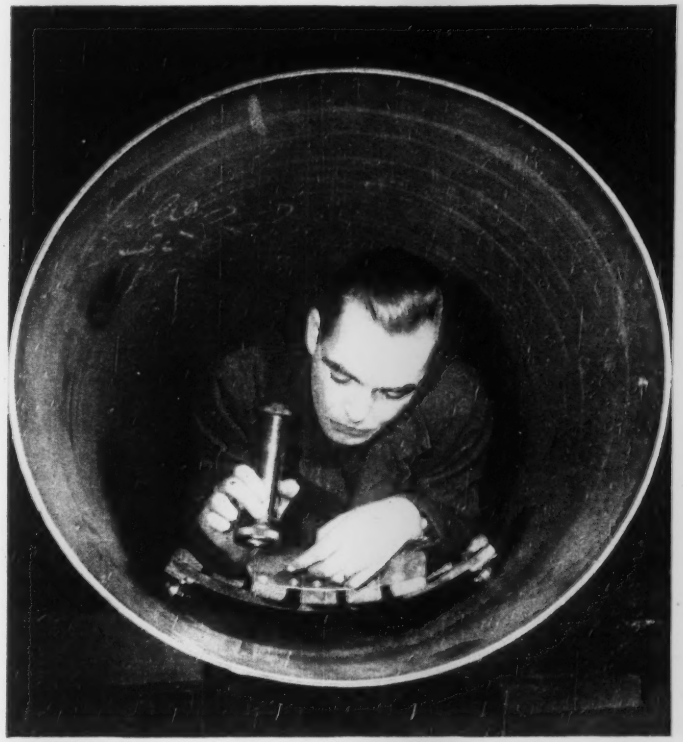


Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

Natural Gas

Its Boom Is Big Business For Contractors



PIPE ITSELF accounts for a third or more of pipeline cost. In mill, inspector rides a dolly in 30-in. pipe, taking a final look at inside seam weld. (U. S. Steel photo)

EXPERIENCED New York sidewalk superintendents gaped a few weeks ago when they looked across the Hudson and saw a new outsize pipe snaking down the Jersey Palisades toward the river's edge.

Natural gas was coming to the biggest city at last.

Now the construction watchers could witness a type of work that had been going on in the Midlands for two decades, that has boomed at a 15,000-mile-a-year rate since World War II; and that entailed three-fourths of a billion dollars worth of construction in 1949.

Today, gas pipeline construction is in the public eye because natural gas is the cheap, abundant fuel that is freeing people from fear of great coal strikes, higher coal prices. Homeowners get a lot of this gas, for heating and cooking and also as gas-electric power; industries take more for many heat-using processes.

The chemical industry goes a step further, by using the gas pipelines to transport raw materials for a whole series of synthetic products. These products are made from certain hydrocarbons that are stripped from the gas at any point along the line (where there's a chemical plant for the purpose). Hydrocarbon removal does not impair heating properties of the gas.

The gas also has potential as a source of electric energy. One Gulf Coast Texas industrial plant produces 120,000 kw of processing power with gas-fueled engines.

The Texas and Louisiana Gulf area is the source of most gas—a good reason why the middle U. S. became the first market area and the first gas pipeline construction area. Since the war, however, pipeline construction has gone both east and west.

With this expansion has come a rash of superlative inch-names for the lines. Thirty-inch lines, out-doing the famous wartime Big Inch (24-in.) oil line to the east, were called "biggest inches." Then a 34-in. line was started for distribution in California; "bigger than the biggest, it was called the "super inch." Now there are "safest inches," "toughest inches," and many others.

• **Heavy steel users**—Pipeline construction in its present volume represents a substantial "demand" for many branches of industry. The demand on the steel industry probably is the most important—as much as 400 tons of steel going into one mile of line. Work progress most often is paced by pipe deliveries, the supply rarely meeting the time demand these days. Northern mills produce at capacity, and by the end of 1952 two new mills will go into production in Texas.

The construction machinery industry also has a stake in pipelining. Most of the machines needed for this work are conventional construction types. Heavy crawler tractors dominate every equipment spread—the pipeliner's expression for a full construction outfit. But special devices catch the visitor's eye.

Making these special devices has become a new, minor phase of Southwestern industrial development. At least ten manufacturers in that area are in on it, some producing complete lines of special machines, such as pipe coaters, benders, line-up clamps, and inside scrapers. Others make "only river-weights, which clamp on pipes to overcome buoyancy in submerged river crossings.

• **Major projects**—New pipelining projects make construction news regularly. Perhaps the most spectacular is the 1,840-mile Texas-New York line (the curse of New York sidewalk "superintendent's" amazement). Building as a single package project at a cost of more than $250 million, this line was started in 1948, will be placed in service soon after the difficult Hudson River crossing is made. Meanwhile, more long lines, loops and laterals go in all over the country. One source listed almost 250 projects under way or planned in 1949. These projects belong to 65 owners and range from 7 to 1,840 miles in length. One of the

latest projects, recently let to contract, is a 1,400-mile 30-in. line, from the Gulf Coast to Chicago, for Peoples Gas, Light & Coke Co. of that city.

A mile of line may cost $35,000 or $100,000, depending on conditions, but a rule-of-thumb is that a mile of line will cost $2,000 per inch of diameter.

• **Number of contractors**—How many contractors share the pipeline business? The best answer probably has been supplied by Frank Chilson, assistant general manager of Fish Constructors, Inc., Houston. This firm is building the Texas-New York line for Transcontinental Gas Pipe Line Corp. Needing to let many contracts at a time for the line, Mr. Chilson has contacted just about every qualified pipeline builder. He says there are 25 major contractors, 50 minor ones.

A contractor can't be too minor, though, because he must have upwards of $750,000 worth of equipment for a single "spread." And he'll spend $5,000 to $10,000 a day while he's working. Contracts normally are let for 40-80-mile lengths, the distance depending on the spacing of compressor stations (where line pressure losses are made up; a station usually boosts pressure from under 500 psi to 700 psi or more). A contractor will put one spread on the line, expecting to make one-mile daily progress where the terrain is not difficult.

Some contractors may double-spread a long contract. However, double-spreading probably would not pay on short contracts because of equipment-moving cost per mile of pipe installed. Owners figure that contract lengths less than 40 miles are uneconomic.

• **Construction procedure**—When a spread of equipment gets on location, crews clear right-of-way to a width of 50-75 ft, depending on the size of equipment to be used. Trucks distribute pipe, and necessary bending is done preparatory to welding.

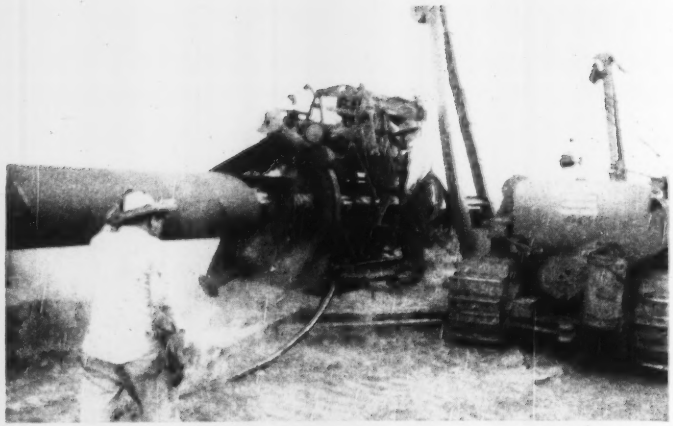
For welding, joint bevels are butted to cut corrosion, then expert line-up clamp is put on butted lengths, so that hand-welding can proceed. Welds are inspected by X-ray.

Next, welded-up sections from several hundred to a few thousand feet long are taken over by the coating gang, whose operation calls for at least two machines that move along the pipe. One is a cleaning and primer machine and the other is a coating and wrapping machine. The former machine abrades corrosion and dirt from the outside surface, sprays on an enamel primer. The latter machine coats the pipe with coal-tar enamel, spiral-wraps it with a protective fabric usually either fiber glass or fabric asbestos felt. Both machines surround the pipe and ride on it during the operation. Side-boom tractors travel with the machines, hoisting pipe up on skids ahead, to provide continuous feed to the machines. Source of coal-tar enamel is a heated floating vessel that is tied connected to the coating and wrap machines.

When wrapping is complete, the pipe is inspected with an electric flaw detector, then the protected pipe is lowered to the ground.

Presently another crew has prepared the trench. In earth, the job is done by a ditching machine. To make room for the bigger diameters, some outsize machines up to 4 ft in trench width do the work. Wheel-type trenchers are favored. Minimum depth is dictated by requirement of 30 in. cover.

The final big step is lowering-in. Side-boom tractors line up along a section, pick it up on canvas slings, and set it over the trench. The section is welded to the previously installed section from where end has been left at ground level; the new joint is hand-stopped and the section is lowered



SPECIAL MACHINES combine with conventional construction types on pipeline jobs. This is a coating and wrapping machine in action, on the King Ranch in Texas. Vapor comes from hot "dope." (ENR staff photo)

TOUGH GOING is old stuff to pipeliners, many of them weaned on oil-field gumbo. A ticklish lowering-in job here involves threading new pipe under an existing one in Tennessee. (International Harvester photo)

RIVER-CROSSING, WET—Side-boom tractors walk with weighted and slatted river pipe while winch tractor on other side pulls pipe into trench in bottom of Alabama's Tallapoosa River. (Jones & Laughlin photo.)

RIVER-CROSSING, DRY—The 34-in. "Super-Inch" splits into two 26-in. lines to cross California's Mojave river, a dry wash. River weights and plenty of cover will protect lines from Mojave's flash floods. (Bechtel Corp. photo.)

into the trench. On the bottom, the pipe rests on soft earth pads, to prevent damage to wrapping. It then is carefully encased in tamped backfill, before final machine backfilling.

These procedures are modified by terrain conditions, of course. Rock excavation may be encountered, where upon depth of cover is reduced to as little as a foot, and coating protection may be improved by bundling on wooden slats or fiber board.

• **River crossings**—One special condition that is practically a separate part of pipeline construction is river crossing. (Some contractors have superintendents who do almost nothing but river crossings.) Practices among contractors as well as design organizations vary. Even the choice between overbed and underbed crossings is partly a matter of preference. And in underbed crossings some engineers prefer to protect and weight down normal-weight pipe; others prefer to use heavier pipe having negative buoyancy.

• **Engineering criteria**—A few engineering criteria have been mentioned. In swamps the earth cover over pipes is increased to 4 ft; in small streams, 4-5 ft; in big streams, 10 ft (but Hudson River crossing cover will be 25 ft). Where pipes go into rail and highway embankments, pipe wall thicknesses may be increased and the whole sealed in a casing with 5-ft cover.

Bends of one degree curvature can be made in large-diameter pipe by ordinary lowering-in stresses. Greater bends, up to 20 deg, can be made in the field by special tractor-mounted equipment; shop-bending or specials must be used for greater curvatures.

Although most large-diameter pipe coating is done in the field, there is a choice between field and yard coating, the latter being more economical as pipe size decreases. (A yard-coating operation was described in ENR, Mar 3, 1949, p 42.)

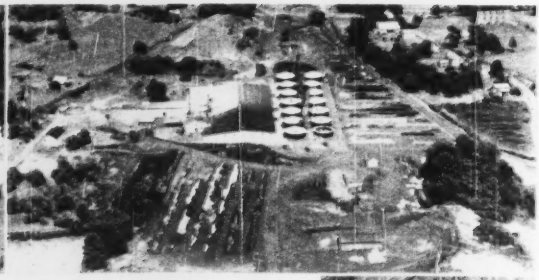
One other yard operation—double jointing—is used by a few contractors. These contractors say 15-20 percent output is gained by joining two 314-ft lengths in roller jigs. Among other advantages they have found that pipe trucks can deliver 63-ft pieces to most locations almost as easily as they can deliver 314-ft pieces. Yard equipment is portable, so yards are moved periodically to maintain economic yard-line haulage distances.

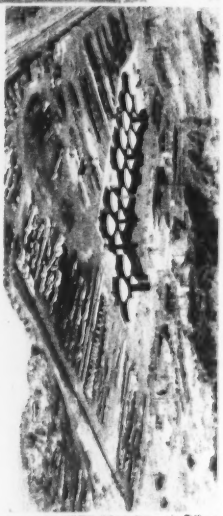
Double jointing also may be done in the field, the basic advantage in each case being that the pipe can be rolled for all-downhand welding. Automatic welding machines now are available only for yards, whereas a satisfactory line automatic machine is still a pipeliner's dream.

• **Location criteria**—While contractors strive for more efficient machines, engineers build up experience in the economics of pipeline location.

Keys to location are (1) suitable river crossings; (2) suitable compressor-plant sites; (3) mountains, swamps and cities to be avoided. As in rail and highway work, a straight line is not necessarily the cheapest distance between two objects, although pipelines can stand steeper grades (depending principally on the grade's feasibility for construction-equipment use). It is necessary to hit streams and steep hills squarely, primarily to avoid erosion trouble, but in the case of crossings also to reduce the length cost. The choice of going over a hill or around it depends on relative construction cost, with little taken into account for line maintenance and inspection.

Because of its length, the 1,840-mile Transcontinental line is a masterpiece of location. The line arcs around the Appalachians, through Georgia and up the Atlantic coastal plain. The location on the resulting easy gradient is 100 miles longer than the straight-line distance, but on a cost-equivalent basis it is 65 miles shorter.





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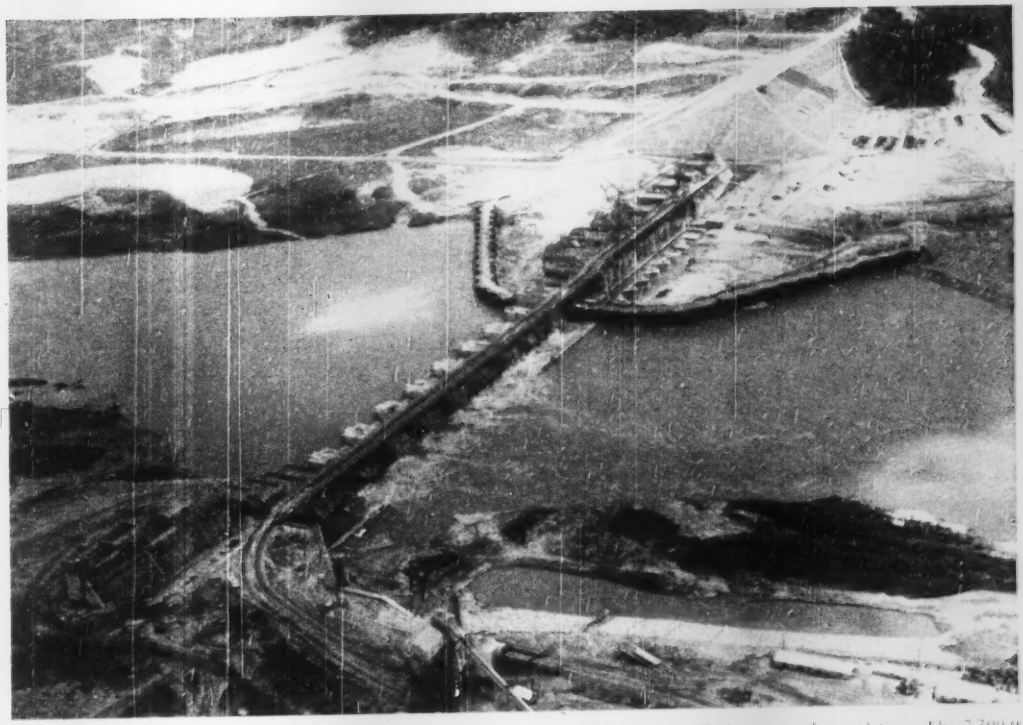


ALL 47' BLOCKS—except the eight over which the Savannah River is now diverted—are well along toward completion. The 2,300-ft construction trestle extends to block 45 (background). Three 50-ton revolving cranes on 32-ft-gage track handle 4-cu-yd buckets at 115-ft radius in concrete placing.

Spurt of Speed Puts Concreting Out Ahead at Clark Hill Dam

CONCRETE PLACEMENT at Clark Hill Dam hit record highs early this spring, as builders pushed production ahead of schedule in a race against hot weather. The peak month was March, when 298,550 cu yd went into the dam—now in the second construction stage 22 miles upstream from Augusta, Ga., on the Savannah River.

Such high production was not easily attained. Concrete could not be mixed any faster than ice could be made to cool it. Heat of hydration was the problem as ambient temperatures rose. Along in May, as the mercury reached for 90 degrees, ice content and mixing time had to be balanced delicately to deliver quality concrete in quantity.

• High production benefits—The contractor's stepped-up springtime production paid off; he went 15,000 cu yd above the schedule curve and now stands to reap many-thousand-dollar benefits.

During hot summer months he can cut back from three shifts to two. Two shifts of night concreting with no hot daytime placement can keep up with form handling that is done during the day.

His big edge on the concreting puts the contractor in a position to concentrate on carpentry, biggest item of labor cost throughout the hot weather.

All-out effort on concreting has advanced the dam to a height where concrete volume decreases faster than formwork area. Pours—till 5 ft deep—become much smaller in volume as the dam section reduces inboard at top. Meanwhile formwork becomes more and more intricate, and square footage of forms needed drops off very slowly.

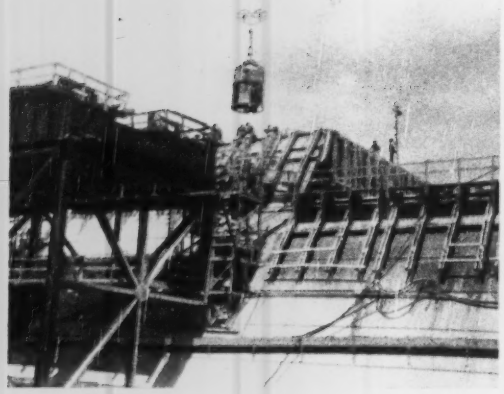
• Earlier progress—Leading up to the heavy concreting season put finished was this schedule:

First stage diversion was finished, and concrete placement began in October, 1948, continuing through that winter and spring. By the middle of May, 1949, 266,500 cu yd of concrete had been placed. Stage I was finished. The Stage 2 cofferdam was ready in August, and excavation for second stage construction took until mid-December, 1949.

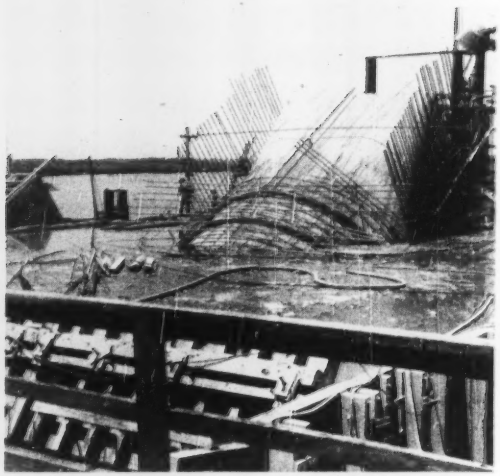
Then concreting began in earnest. Monthly quantities went like this:

Dec	2,151 cu yd
Jan	29,000 cu yd
Feb	74,444 cu yd
Mar	98,550 cu yd
Apr	75,775 cu yd
May	50,065 cu yd

By the end of May concrete in the dam reached 440,000 cu yd—55 per



NEAR THE TOP—Big production during late winter and spring low concreting up high where pours get smaller.



FORMWORK IS TOUGHER around the headworks. But summer is the ideal time to go light on concrete, heavy on carpentry.

cent of its total volume. During peak production there were 24,648 cu yd of concrete placed in the high deck and 4,850 cu yd in the high dec

• **Cooling water used**—The contractor was two months behind schedule because of late fall's steel strike when he started Stage 2 concreting. So, instead of putting his load up in 2½-ft lifts for the first 10 ft above bedrock, he was allowed to embed cooling pipes to circulate river water and place 5-ft lifts from the start.

This was a departure from normal Corps of Engineers procedure, but it was confined in this particular case (providing cool sand were available) so that the initial time bonds could be overcome and all big pours could be completed in summer. Result was equal to those obtained in Stage 1 placement, where 2½-ft lifts were required.

• **Temperature control**—Close control of material was maintained throughout with special emphasis on temperature of concrete at the point. Even as peak ambient temperatures reached 90 degrees, ice in the mix kept concrete being placed down between 50 and 60 deg.

The idea of weather warmed up was to use all the ice the plant could make in 7 days distributed over the 5-day concreting schedule in a manner to result in as low a mixing temperature as possible. Ice was varied from 250 lb per 4-cu-yd batch on coolest days to 450 lb at peak temperatures. The heaviest additions of ice required up to one minute extra mixing time beyond the 2½-min minimum specified to melt the ice particles and distribute the water uniformly through the batch.

• **Sand from stone**—Another reason for long shirt mixing time was this. Sand in the mix was granite ground into it in a ball mill. It kept too long in the mixer, this broke down further, and there developed a real danger of excessive fines.

All aggregate comes from the same dome of granite located close by the dam on the Georgia shore. Aggregate plant operation closely resembles that at Bigge Island Dam, described as "Sand to Six-inch Stone at Full Scale Quarry" in ENR 9-6-1945, p. 50.

If anything, the granite surface at Clark Hill is too near the dam, causing the contractor to work at rather compact straight-line plant from quarry to mixing plant. Four sizes of stone run the usual crusher-screen stockpile-reclaiming tunnel route. Sand is made in a 12-ft rod mill, then put through a wet process classifier to remove most of the 100-mesh size.

As it reaches the mixer, about 5% of the aggregate is +100, after 24-min mixing, 12.15% of the aggregate is +100. Fineness modulus goes from 3.00 to 2.61 in the mixer, and the angular granite fines, if excessive, can cause bleeding in the mix and inhibit workability.

The fine cobbles and smaller rock sizes 3, 1½ and 2 in. were originally to get no pre-cooling. But the contractor has rigged atomizers on the conveyors discharging rock onto stockpiles of all-size 1½ in. These spray a fine mist of water on rock as it drops

CLARK HILL DAM

PURPOSE: Flood and low water control; power production

RIVER FLOW:

Sept. 1929 (est.)	277,000 cfs
Aug. 14, 1940 (recorded)	203,000 cfs
Minimum flow (est.)	1,200 cfs
Av. uncontrolled flow	8,663 cfs
Av. regulated	6,000 cfs

RESERVOIR:

Length	37 miles
Shoreline	1,200 miles
Capacity	2,900,000 acre-ft

DAM:

Greatest height	200 ft
Length of concrete section	2,282 ft
Total length	5,680 ft
Spillway length	1,092 ft
No. of tainter gates	23
Gate size—width	40 ft
height	35 ft
Penstock diameter	20 ft
No. of outlet sluices	8
Sluice size—width	4 ft
height	9 ft
Volume of concrete	1,050,000 cu yd
Volume of earth embankment	3,300,000 cu yd

POWERHOUSE:

No. of units	7
Head on units	136 ft
Capacity of each at 136-ft head	40,000 kw
Total capacity	280,000 kw

COOLING—Cobbles coming off conveyor drop to stockpile through fine water spray.

onto the pile, and the ensuing evaporation has been found to cool the rock as much as 8 deg when relative humidity is low.

• **Ice plant**—The real refrigeration comes in at the mixing plant where ice is fed from five 50-ton-per-day ice makers. These produce 1¼-in. pellets which are stored in a 220-ton bin, conveyed to the batcher and put through a crusher into mixers. Water going into the mix is cooled to about 35 degrees. The resultant mix has been kept between 50 and 60 deg with 70 deg set as the maximum allowable by the specifications.

• **Mix specifications**—Concrete for the interior of the dam has a 3 to 1 portland to natural cement ratio by volume, and an air entrainment agent is interground with the natural cement to give 4½-5% entrained air in that portion of the mix passing a 1½-in. screen. Mass concrete mixes were designed 6.3-0.68 (6-in. maximum size, 3 sacks of cement per cu yd and 0.68 the water-cement ratio). Average 28-day compressive strength was found by test to be 2,700 psi.

Face concrete was made with 85 parts portland cement, 15 parts natural. A typical mix specification here was 6-4-0.54—more cement per cu yd and lower water cement ratio than the interior concrete. This mix had a 28-day compressive strength of 4,400 psi.

• **Concrete placement**—Mixers dump into 4-cu yd buckets on diesel-drawn flatcars riding standard gage tracks out to the steel construction trestle. Three big revolving cranes, riding this trestle, swing the buckets out to the pours where concrete is electrically vibrated and cured under a water spray system. There is a minimum of five days between pours—usually longer due to the 5-day work week.

Horizontal construction joints are scrubbed with high velocity air-water jets before a new lift is poured. Upstream and downstream faces are water cured for 28 days. Bulkheads are membrane cured. Quality concrete and formwork are producing smooth, dense exterior surfaces.

Bid price of mass concrete was $12.09 per cu yd in place plus cost of the cement. Reinforced concrete in walls and piers up around the headworks where formwork is intricate is listed at $29.50 per cu yd—again, exclusive of the cost of cement used.

• **The work ahead**—Closure at Clark Hill is scheduled to start Sept. 1 and continue through the fall when rainfall and runoff are lowest. Eight low blocks will be brought up to 2½ and 5-ft lifts poured behind watertight bulkheads until head developed over the dam's eight 40-ft sluices results in passage of the river's entire flow.

No contract has been awarded as yet for the powerhouse. This will house seven 40,000-kw units, and all are to go in at once. The present $26,420,000 contract is to be completed Jan. 25, 1952. Ultimate cost of the entire project is estimated to be $76,000,000.

Clark Hill Dam is the key Savannah River project. Ten others were approved for the basin under the Flood Control Act of 1944. One of these, Hartwell, has been authorized, but no funds have been appropriated.

Allstates Constructors Inc. is prime contractor on the job. This firm is a combine made up of: Walsh Construction Co. (sponsor company), Ralph E. Mills Co., Blythe Brothers Co., J. A. Jones Construction Co., B. Perini & Sons, Inc., and Missman Construction Co.

C. D. Riddle is project manager, Steve C. Richards, project superintendent, and E. F. Taylor, job engineer, for the contractor.

For the Corps of Engineers, Lt. Col. Robert Erlenkotter is district engineer, and Fred W. Lacey, Jr. is resident engineer. A. C. Mirane is assistant resident engineer and W. T. Neeland is materials engineer. Charles T. Main, Inc., Boston consulting firm, did the design under supervision of the Corps of Engineers.

Tidal Knowledge Evaluated

Clarification of the complexities of tidal hydraulics and related phenomena, always a problem for engineers engaged in channel and shore protection work, is being attempted by the Committee on Tidal Hydraulics established by the Chief of Engineers in the fall of 1948. The committee is composed of seven staff engineers of the corps who have had wide experience in designing and maintaining navigation channels and shore protective works. They are: Clarence J. Wicker, chairman, Joseph B. Tiffany, recorder, Berkeley Blackman, Richard O. Eaton, James R. Johnston, Martin A. Mason, Oscar Rosenzweig.

A primary objective of this study is to improve channel design in tidal waters so as to reduce shoaling or limit it to specific areas, thus minimizing the expense of maintenance dredging. Channels with the best self-maintaining characteristics can be provided only if the designers properly evaluate the interrelationship of channel cross section, flow, tidal effects and regulating works.

Committee members already have analyzed and correlated the results of many independent studies to determine the extent of present knowledge and to find out what aspects of the subject need further investigation. This work is continuing. From this ground work, the committee will determine and exercise technical supervision over programs of model study, investigation and research designed to provide the knowledge necessary to arrive at adequate solutions for the engineering problems associated with tidal phenomena.

Report No. 1, "Evaluation of Present State of Knowledge of Factors Affecting Tidal Hydraulics and Related Phenomena," has been published and distributed to institutions and organizations known to be interested in the subject. Copies may be obtained from Joseph B. Tiffany, recorder, Committee on Tidal Hydraulics, Waterways Experiment Station, P. O. Box 631, Vicksburg, Miss. Price, $1.

Comment on Report No. 1 is invited by the committee as well as contributions of data pertinent to the study.

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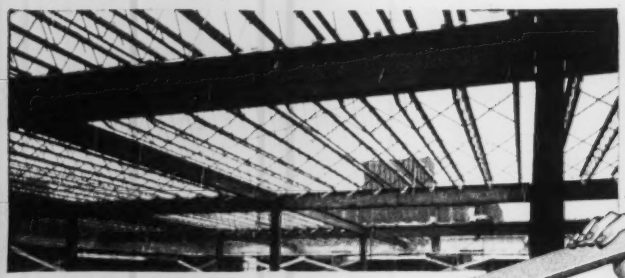

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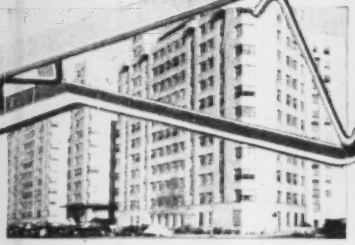

Truscon "O-T" Joists used in 2601 Parkway Apts., Philadelphia. Aaron Kidder, Archt.

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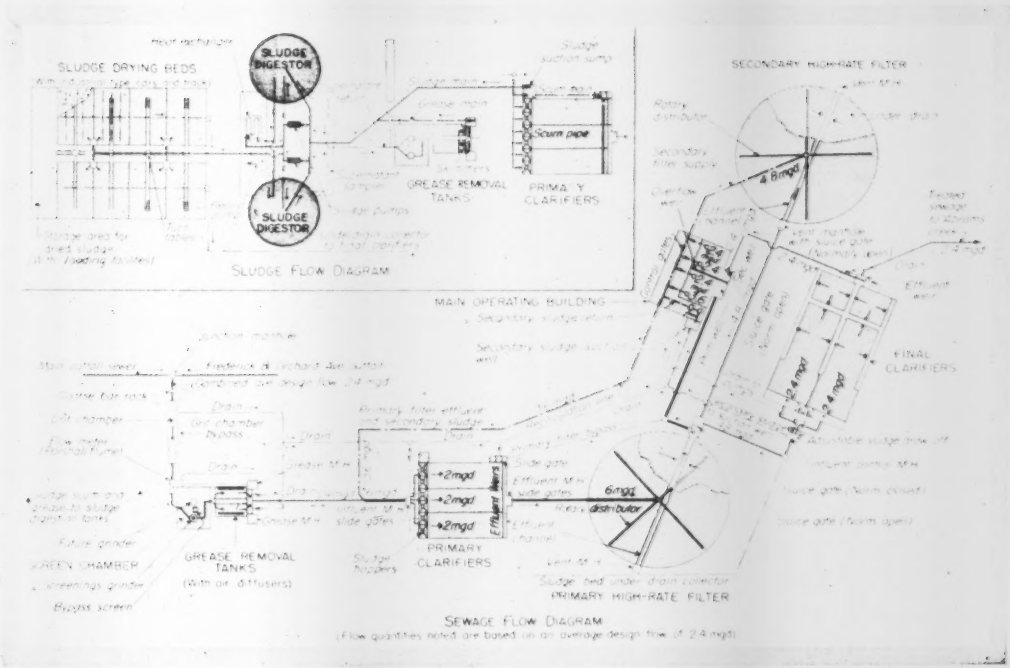
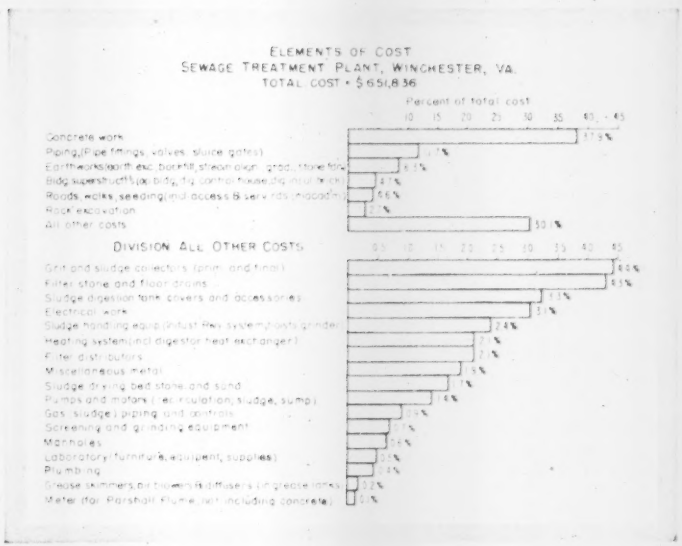


FLEXIBILITY of operation and reliable high-quality treatment are obtained in the two-stage biofiltration sewage plant

What Can You Learn From a Sewage Project?

• Performance summaries • Unit Operating Costs • Construction-cost breakdown

M. H. Klegerman
Consulting Engineer
Alexander Potter Associates
New York, N. Y.


ELEMENTS OF COST
SEWAGE TREATMENT PLANT, WINCHESTER, VA.
TOTAL COST - $ 651,836
Percent of total cost
10 15 20 25 30 35 40 45
Concrete work
Piping (pipe fittings, valves, sluice gates)
Earthworks (earth, etc. backfill, stream diversion, grad., stone filling)
Bldg. superstructure (as bldg. fdg. cornice, flooring, misc. brick)
Roads, walks, seeding (incl. access & service roads, grading)
Rock excavation
All other costs
DIVISION ALL OTHER COSTS
Grit and sludge collectors (prim. and final)
Filter stone and floor drains
Sludge digestion tank covers and accessories
Electrical work
Sludge handling equip. (Infact flex system, hoists, grinder)
Heating system (incl. digestor heat exchanger)
Filter distributors
Miscellaneous metal
Sludge drying bed stone and sand
Pumps and motors (recirculation, sludge, sump)
Gas, sludge & piping and controls
Screening and grinding equipment
Manholes
Laboratory (furniture & equipment, supplies)
Plumbing
Grease skimmers, air trowels & diffusers (in grease tanks)
Meter (for Parshall flume, not including concrete)

CONCRETE WORK eats up the greatest portion of the cost of a sewage-treatment plant. Are new structural ideas called for to get lower costs?

Massive, the beginning of an intensified pollution-abatement campaign in Virginia, a 2.4 mgd biofiltration sewage treatment plant at Winchester was put into operation last March. With a maximum capacity of 6.0 mgd, the plant features a high degree of treatment made necessary by heavy seasonal organic industrial wastes and meager effluent dilution. It is designed for an equivalent population of 30,500 of which 16,000 represents design resident population.

Accurate records of plant performance and operating costs are being kept. When these are placed beside design statistics, the industrial waste charge schedule and an analysis of construction costs, it's possible to get a well-rounded appraisal of what Winchester is receiving for its investment. In brief, here's the story:

• **High-quality effluent**—During the

shakedown operating period, the plant has performed up to expectations. BOD and suspended solids removal are about 9% and 85%. These results are typical under present conditions and loadings. No analytical data on plant efficiency under the heaviest fruit-harvest waste loadings are available. The amount of residual BOD in sewage at various stages of treatment may be of particular interest (Table I).

• Cheap at twice the price—The people of Winchester are fortunate. They're getting excellent sewage treatment for only 4¢ per day per capita. This is based on a present connected population of 14,500.

Operating costs based on the initial three months' operating period are reported in Table II. Operation over longer periods will, of course, introduce some additional costs due to maintenance needs. Labor costs will increase but slightly even when daily volume treated is substantially increased. Unit cost per capita will, therefore, not change perceptibly.

• Investment—Contracts for construction of the Winchester plant were let in April 1948. ENR Construction Cost Index equaled 443.0. Costs of the completed project are:

Lateral sewers	$ 83,400
15,000 ft of 8- and 10-in. VC sewers	
Main outfall sewer	117,853
11,500 ft of 24- and 27-in. VC pipe	
Treatment plant	631,836
Total project cost	$833,089

• Economic analysis—Elements of cost of the treatment plant subdivided into principal construction and equipment items are "presented" in the bar graph. Heavy construction items—concrete work, piping, earthwork, buildings, and roads—account for almost 70% of the total cost. Items peculiar to sewage-treatment projects take 30%.

The most important cost item is, of course, concrete structures. It represents 38% of the total.

The principal equipment investment is represented by the grit and sludge collectors. They take 4% of the cost. The sewage-flow meter, transmitter, indicating, totalizing and recorder is running 0.1% in the item of least cost.

• Industry pays its way—All of the city's industries are connected to the sewerage system. Discharge of industrial wastes is regulated by ordinance. It stipulates limits for pH and temperature, requires equalization of waste outflow; prohibits discharge of bactericidal substances and demands periodic chemical analyses of all wastes.

Industry pays for treatment and disposal service. Charges are computed by an established formula, locally referred to as the "incentive method." By it, industry's service charges are related to volume, BOD and suspended-solids content of their wastes. The formula, which was worked out by S. H. Reaves, superintendent of water and sewers, is:

$$F = \frac{.001 \times R(S - 170) + (B - 280)}{300}$$

in which

F = the factor

R = ratio of use

S = suspended solids (ppm)

B = 5-day biochemical oxygen demand (ppm)

The factor thus derived is multiplied by the cost per million gallons for total collection and treatment of all sewage and wastes of the city to determine the rate per million gallons for any industry. This rate is then applied to 80% of the water used by the industry. (Ratio of use is the city's total industrial waste BOD in pounds to plant design BOD.)

The formula makes it possible for company managers to compute their waste-service costs in advance of payment. They can, moreover, determine the effect on such charges of varying any one or more of the three constituents of the waste. This neatly enables the managers to evaluate the influence of new plant equipment or process changes on cost of disposal service. Hence the term "incentive method."

• Reasons for process—Two-stage biofiltration for treatment of the sewage and industrial wastes was adopted because of:

1. Need for maximum removals of organic pollutants at all times.

2. Greatly fluctuating industrial load and marked variations in sewage characteristics.

3. Ability to provide flexibility in recirculation ratios. The normal ratio for eight months can be increased during the apple waste period when pollution loads are a maximum.

4. Hydraulic limitations imposed by site topography.

• Treatment's complete—The biofiltration plant includes a grit chamber, Parshall flume, comminutor, two preaeration tanks for grease separation, three primary clarifiers, two high-rate trickling filters, a pumping station for recirculation, and two final clarifiers.

TABLE I—TYPICAL OPERATING DATA
(Week of April 24, 1950)

Average flow		1.46 mgd
pH influent		7.5
pH effluent		7.5
Recirculating Ratios		
primary filter		2.5
secondary filter		1.7
Flow to Settling Tanks		
To primary tanks	1.46 mgd + 2.5 (1.46)	= 5.12 mgd
Primary-tank detention		= 1.76 hr
Primary-tank settling rate		= 1,250 gal./day/sq ft
To Final Tanks	1.46 mgd + 1.7 (1.46)	= 3.94 mgd
Final-tank detention		= 2.74 hr
Final-tank settling rate		= 535 gal./day/sq ft
BOD		
Raw sewage		= 217 ppm
Primary-tank effluent		= 89 ppm
Primary-filter effluent		= 65 ppm
Final effluent		= 15 ppm
Overall BOD reduction		= 93.1%
Suspended Solids		
Raw sewage		= 194 ppm
Primary-tank effluent		= 82.33 = 15% reduction
Final effluent		= 3.1 ppm
Overall suspended-solids reduction		= 85.0%
Filter Loading (BOD) Including Recirculated Flow		
Primary:	5.12 mgd @ 89 ppm 3,800 lb	= 2.6 lb/cu yd/day
Secondary:	(1.46 mgd @ 65 ppm 2.48 mgd @ 15) 1100 lb	= 0.80 lb/cu yd/day

Sludge is processed in two digestors with a control house between them and on drying beds.

The main operating building houses a laboratory, recirculation pumps and pipe gallery, main electrical control board, personnel facilities and storage space.

• **Tear-drop dilution**—Treated sewage is discharged to Abrams Creek, a small stream with a 14 sq mile drainage area above the plant's outlet. In this area, considerable stream loss occurs into solution channels in the prevalent limestone formations. As an example, Abrams Creek joins Opequon Creek about four miles below the plant and runoff from the Opequon Creek watershed is only 7.5 in. out of an average annual rainfall of 36 in.

• **Industrial wastes**—The region around Winchester is devoted extensively to apple growing. This has led to the development of a fruit processing industry of significant size. In autumn, wastes from these industries discharged to the municipal sewers predominate and impart their characteristics to the domestic sewage and mixed wastes from the entire city. Typical analyses of apple processing wastes show:

Biochemical oxygen demand	750 to 1,850 ppm
Suspended solids	150 to 400 "
Total solids	2,000 to 5,000 "
Total volatile solids	1,400 to 3,500 "

Other industries contributing wastes but on a year 'round basis include a woolen mill, a small abattoir, a large poultry-dressing plant, several dairies and a laundry.

The woolen mill's wastes are high in suspended solids (1,400 to 5,000 ppm) and in volatile content. BOD's are about 450 ppm. Grease content is at times also high. Excess dyes frequently impart their color to the city's sewage.

Characteristics of wastes for the other industries are typical.

Volume of industrial wastes in the fall equals that of sanitary sewage. During other seasons, it is about 30% of the total flow.

• **Credits**—Percy D. Miller was chairman of the sewer committee of the Common Council during planning and construction of this project. S. Lee Grant is city manager.

Analytical and operating data are condensed from monthly reports of S. H. Reaves, superintendent of water and sewage.

The plant was designed by Alexander Potter Associates. Construction was supervised by Howard A. Murphy as APA's resident engineer.

TABLE II—OPERATING COSTS
(First 3-Months Operation)

Electric power cost		$4.60 per mgd
Labor cost		17.30 per mgd
Other costs		1.40 per mgd
	Total Cost	$23.30 per mgd
BOD Removed per mg		= 0.93 (8.34) (217) = 1,680 lb = 0.84 tons
Suspended solids removed per mg		= 0.85 (8.34) (194) = 1375 lb = 0.69 tons
Cost per ton BOD removed		$= \frac{23.30}{0.84} = \$27.70$
Cost per ton SS removed		$= \frac{23.30}{0.69} = \$33.80$
Cost per capita connected population		$= \frac{(23.30)(1.40)}{14,500} = 1.46$ per day

TABLE III—SIZE OF PRINCIPAL PLANT UNITS

Grit chamber	— Channel type	30 ft long
Parshall flume	—	18-in. throat
Screenings grinder	— Drum type	25 in. dia
Grease-removal tanks	— (2 Units) 8 ft deep by 6 ft wide by 51.5 ft long	
Primary clarifiers	— (3 Units) 12 ft deep by 20 ft wide by 70 ft long	
High-rate filters	— Primary filter — Secondary filter	125 ft Dia 3 ft deep 125 ft Dia 3 ft deep
Final clarifiers	— (2 Units) 8 ft deep by 33 ft wide by 115 ft long	
Sludge-digestion tanks	— (2 Units)	Each 43 ft dia by 24 ft SWD Total volume 70,000 cu ft
Sludge-drying beds	— total area 30,500 sq ft	

(All depths refer to liquid depth)

TABLE IV—TREATMENT PROCESS DESIGN DATA

Ave. design flow	2.4 mgd
Max. design flow	6.0 mgd
5-Day BOD (except during fruit season)	3,990 lb/day
5-Day BOD (during fruit season)	7,590 lb/day
Filter loading* (except during fruit season)	1.0 lb BOD/cu yd stone
Filter loading (during fruit season)	2.0 lb BOD/cu yd stone
Primary clarifier	Detention time at recirculation ratio of 1.5 = 1.5 hr Settling rate = 1,430 gal/day/sq ft tank area
Final clarifier	Detention time at recirculation ratio of 1.0 = 2.25 hr Settling rate = 530 gal/day/sq ft tank area Weir length = 175 ft/tank
Digester capacity	4.4 cu ft/cap. design resident population 2.3 cu ft/cap. design "seasonal" pop. (fruit season only)
Sludge-drying beds	1.9 sq ft/cap. design resident population 1.0 sq ft/cap. design "seasonal" pop.

$\left(\text{Recirculation ratio} = \frac{\text{return flow}}{\text{raw sewage flow}}\right)$

* Exclusive of BOD in recirculated flow. See Table I.

Steel Panels for Desert Bridge Deck

Satisfied with the results of an experimental installation, California highway engineers are considering wider use of a system of reflecting road bridges with steel panels. The experimental unit was completed recently on Smokey Gulch Bridge, 7 miles east of Indio on U.S. routes 60 and 70.

Objectives of the work were (1) to replace a wooden deck with a more permanent type, (2) do this at a minimum of cost which in related locations means a minimum of on-the-job labor, (3) develop a system whereby half the deck can remain in use for one-way controlled traffic while work on the other half is underway.

Vital statistics. The 7x19-ft steel panels are all welded. The deck plate is ¼ in. thick, stiffened by 4x4-in. plates spaced at 1-ft 7½-in. centers. Three 10-in. wide flange 21-lb beams and two 10-in., 15.3-lb channels support each panel.

Individual panels are bolted together with six 2-in. bolts on each side and two 2-in. bolts at each end. Each panel is fastened to the 12x24-in. bent cap with four 2-in. bolts.

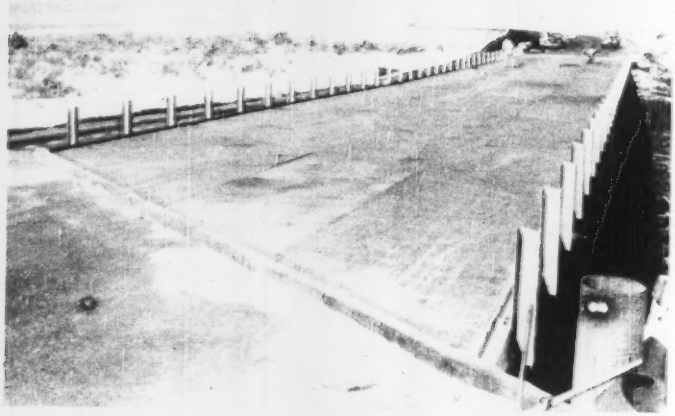
Bridge length is 250 ft, built up of twelve 19-ft spans. Over-all width is 28 ft, clear roadway width 26 ft 10 in.

Cost-saving erection. Except for the blacktop surfacing, deck replacement took only two days. This has significance relative to cost of the work. The engineers claim that initial cost is comparable to that of a wooden deck structure with a concrete surface, in isolated locations it is probably much lower, justifiable.

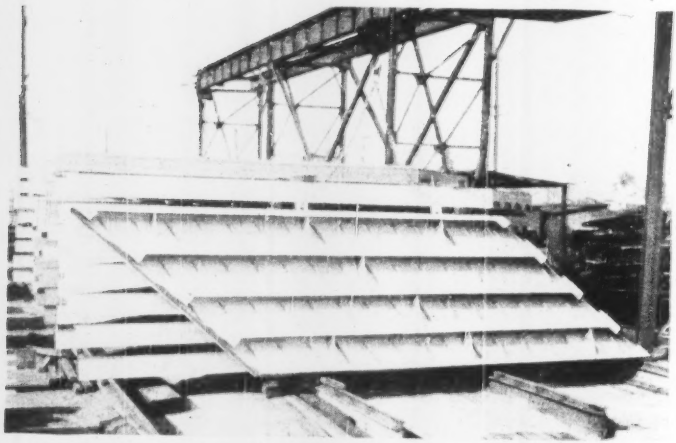
The state engineers devised a system whereby the bridge could have been widened, half at a time, thus permitting one-way traffic. This would eliminate the necessity of contracting a detour. However, at Smokey Gulch there was limited sight distance and considerable traffic. Budget, it was decided, was to build a detour here.

Because of the dry climate in this desert location, little or no painting will be required. State engineers feel that this type of bridge also will be used quite a bit in dry locations and not those subject to much moisture.

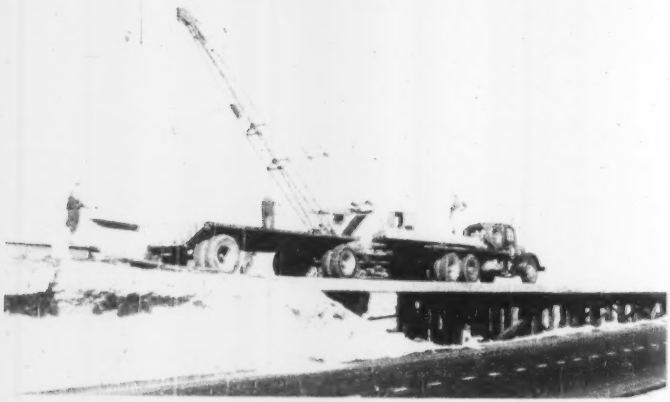
The project was designed and built under the supervision of the bridge department of the California Division of Highways. L. W. Panhorst, bridge engineer. Bethlehem Pacific Coast Steel Corp. erected the steel work.



THREE DAYS were required to install these 48 steel panels for a 250-ft desert bridge deck. A 2- to 4-in. wearing coat of bituminous mix will top the steel panels.



PANELS were 7x19 ft. Deck plate was ¼ in. thick. Individual panels are all-welded, then bolted together to form deck. Entire assembly weighed less than 5 tons.



EQUIPMENT operating on panels already in place easily installs the bridge deck.

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Like ball and bat, ROCKMASTER split-second detonators and Atlas explosives just naturally *go together!* And fitting like a *glove* with them is the method of loading, tying all together with a *system*.

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Exceptionally economical to use where water conditions are not severe.

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High cartridge count, economical explosives for comparatively dry conditions.

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Especially formulated and packed for quarrying and stripping. Excellent for large-diameter blast holes under most conditions. Available in 8 strengths—low, medium or high velocity.

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And that's not all. You can see proof of the advanced nature of this new balanced engineering throughout every 6-wheel model. One typical example is the new third differential. This new differential takes the place of the power divider, eliminates need for an extra propeller shaft, and makes practical shorter 6-wheel units.

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READER COMMENT

Prestressing Bars Bonded

Sir: In ENR June 22, p 41, you infer that the high tensile steel bars are not grouted in for the Lee McCall system of prestressing. This, I take it, is merely a slip in summarizing the technical data about this system. It is well known in this country that we fully grout in the bars in all but a few special cases, and for these special cases, the basis of design is varied to correspond.

It is, of course, true that the high efficiency nut we have developed will withstand the ultimate stress that can be put on the bar. In other words, notwithstanding the threading, the threaded part of the bar and the special nut develop the full strength of the plain unthreaded bar. So there is, therefore, no need for grout to be used to assist in obtaining the full strength of the end anchorage. Nevertheless, when overloaded up to failure, the grouting in of the bars results in a greatly improved performance.

DONAVAN H. LEE
Consulting Engineer
London, S.W.1., England

Better Asphalt Pavements

Sir: In the article "Better Asphalt Pavements Produced by Proper Handling of Plant Mixes," by N. M. Finkbiner, Engineer of Materials, Oregon State Highway Commission, (ENR July 13, p 37) the following paragraph appears:

"As previously mentioned, fast rubber-tired traffic soon demanded non-slippery surfaces. One early answer was to roll stone chips into the surfaces of dense-mixed pavements immediately after the initial rolling. These chips were used either uncoated or coated with asphalt and applied to the pavement surface at the rate of about 5 to 20 pounds per square yard, but the method was not very successful. Now the best method is to build the non-skid character of the road into the mix 'open mix'."

This paragraph infers a conclusion so absolutely opposed to all non-skid tests and conclusions drawn therefrom—research extending over two decades—that it appears necessary to again point out the error of this line of thought.

R. A. Mover, while professor in highway engineering, Iowa State College, carried on extensive skid tests over a number of years which proved that sheet asphalt pavement—a mixture of asphalt and sand—was from 15 to 40% more non-skid than any other pavement on the market. This is, of course, NOT an OPEN MIX.

In view of the fact that no research since has even questioned Prof. Mover's findings and further, that the screen tests of Oregon's non-skid mixture as given by Mr. Finkbiner will not produce, in any sense of the word, an "open mix," I deem it important that his "open mix" inference be corrected.

TROY CARMICHAEL
Highway Engineer
Montana State Highway Commission

Sir: Owing to the absence of Mr. Finkbiner because of illness I am taking the liberty of commenting on the letter from Troy Carmichael in which he discusses a portion of the article "Better Asphalt Pavements Produced by Proper Handing of Plant Mixes."

It is believed that Mr. Carmichael's criticism of the term "open mix" will be found not valid when his quoted paragraph is considered in context with the paragraphs following in the article.

These paragraphs state that the Oregon non-skid mix consists entirely of material passing the ½ in. screen and is considered "open" because it possesses a high void ratio when compared to our so-called dense mixes. It is very evident that a mix of this grading will provide the sandpaper finish found to be one of the most non-skid in the Mover report.

It should be pointed out that the term "open mix" has reference to the amount of void content and is in no manner predicated upon individual void size.

C. W. HARRA
Assistant Engineer of Materials
Oregon State Highway Commission

Never Too Cold

Sir: In looking over the Hungry Horse article in the June 8 issue, I was surprised to find this statement: "With the changeover to a steel-frame structure, contractors will be able to work through cold weather, when concreting operations would normally have to be shut down." Since when have concreting operations *had to be* shut down because of cold weather?

R. B. Young
Assistant Director of Research, Hydro-Electric Power Commission of Ontario

EDITOR'S NOTE—Mr. Young's asperity is matched by his authority. He has been in the cold weather concreting business for a good many years.

STAINLESS STEEL

WHICH ALLOY FOR YOUR PIPING JOB?

Industry is rapidly turning to stainless steels as standard material for an increasing number of piping applications. Their ability to withstand the action of many corrosive agents, their toughness in sub-zero applications, their strength and ductility in elevated temperatures, and their high scaling-resistant properties, answer many tough piping problems.

Recent surveys show that 95% of the demand for stainless steel piping is in these three types:

Type 304—18% chromium, 8% nickel
Type 347—18% chromium, 8% nickel, 1% Columbium
Type 316—18% chromium, 8% nickel, 2% Molybdenum

Each exhibits inherent qualities that make it ideal for certain applications. Thus, while the group as a whole covers 95% of industry's needs, individual applications should be studied carefully to determine which grade is best for the job.

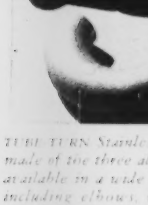
For example, a prominent soap manufacturer's requirements are 10% Type 304, to eliminate product contamination—45% Type 347, to carry low temperature organic acids—and 45% Type 316, to carry the same acids at elevated temperatures.

In the food and dairy industry, where the service is only mildly corrosive, the main reason for using stainless steel is to promote cleanliness and to eliminate contamination. Type 304 satisfies most of the demand here.

To provide the greater strength, greater safety and permanently leak-proof joints of welded piping construction, Tube Turns, Inc. has developed a wide selection of types and sizes of welded fittings and flanges in all three grades of stainless steels listed above. It's the most complete line available today.

TUBE TURN Stainless Steel Welding Fittings made of the three alloy types listed here, are available in a wide range of parts and sizes, including elbows, returns, tees, reducers, caps, lap joint stub ends, laterals and crosses. Flanges are also furnished.

NEW CATALOG



Write today for your free copy of the new Stainless Steel catalog, just published by Tube Turns, Inc. It contains the complete description of TUBE TURN Stainless Steel Welding Fittings and Flanges, as well as valuable information on the use of stainless steel piping.

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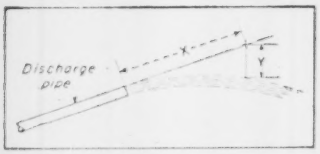
FIELD AND OFFICE

How to Estimate Flow from Pipes



Fast and simple means of estimating flow from pipes—horizontal, inclined and vertical—are described in March and April issues of THE RECLAMATION ERA. Author of the continued article is H. R. McDonald, engineer of the Bureau of Reclamation's hydrology division, Denver, Colo.

Discharge from all but vertical pipes, says McDonald, may be found in gpm using the formula—

$$Q = \frac{3.61\,A\,X}{\sqrt{Y}}$$

where A is cross-sectional area of water in the pipe in square inches, X is distance (in inches) along the pipe axis to a given point on the free-falling stream and Y is the vertical distance (inches) the stream falls in reaching the given point. (See the accompanying sketch, left above.)

If Y is assigned a constant value of 12 in., then only A and X need be determined for calculation of Q. Freeboard in the end of the pipe must be considered in figuring area of water flowing.

Fig. 1 gives solutions of the formula for Y = 12 in. and diameters of pipe from 2 to 15 in.

For estimating discharge of water flowing upward from a vertical pipe, McDonald presents Fig. 2. This graph is developed from tables based on findings of L. E. Lawrence and P. L. Braunworth ("Fountain Flow of Water in Vertical Pipes," ASCE Transactions, Vol. LVII, p. 264). Its use requires only measurement of H, height of the jet.

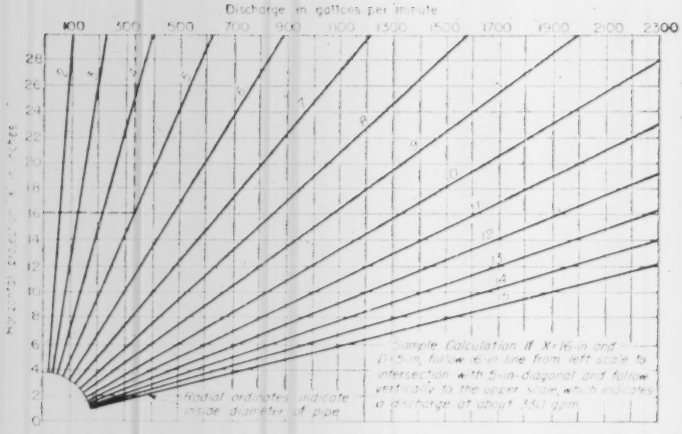


FIG. 1. DISCHARGE DIAGRAM for non-vertical pipes based on constant value of Y = 12 in. If pipe is not flowing full, multiply discharge found from diagram by an effective-area factor.

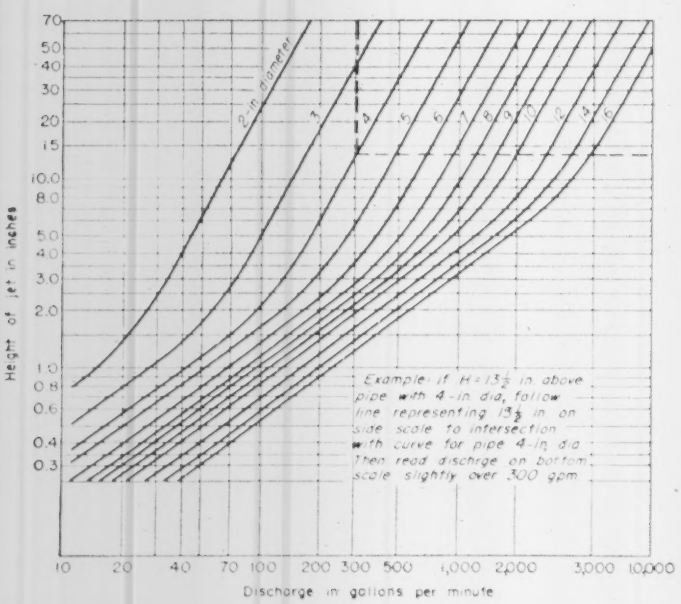
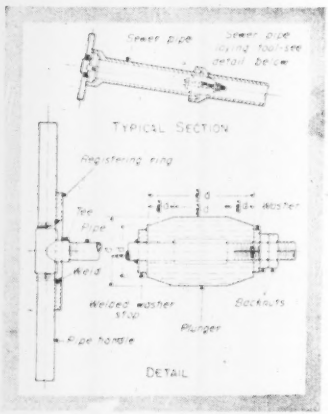

Height of jet in inches
2-in. diameter
Example: If H=13½ in. above pipe with 4-in. dia, follow line representing 13½ in. on side scale to intersection with curve for pipe 4-in. dia. Then read discharge on bottom scale slightly over 300 gpm
Discharge in gallons per minute

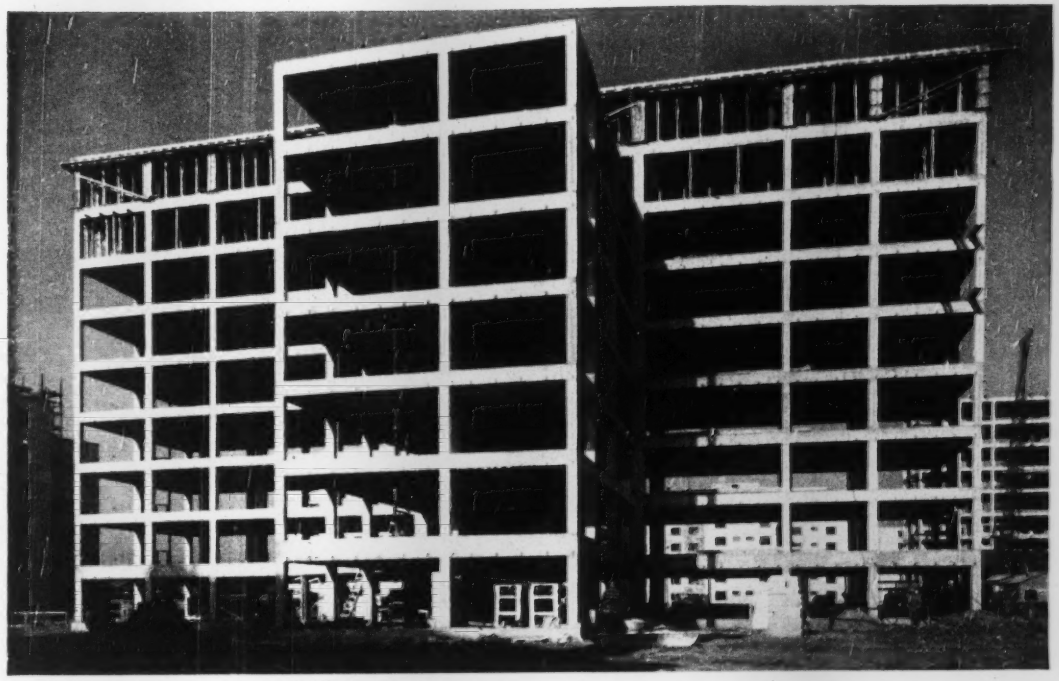
FIG. 2. UPWARD FLOW from vertical pipe can be found from this diagram, given the inside diameter of the pipe and height to which water rises above its end.

Clay Pipe Aligner

This simple tool can be made up on the job, using either a rubber plunger or a wood plunger. Bells and spigots of clay pipe are held true during bedding and jointing. And the plug prevents intrusion of cementing material into the pipe bore—Mardsen G. Dempster, Canterbury, Victoria, Australia.



JOB-MADE aligner for clay pipe.



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REINFORCED concrete frame and floor construction offers three important *plus* features to architects, engineers, contractors, owners and investors.

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Third, concrete frames and floors allow maximum latitude in design. There is a concrete floor system to meet every occupancy requirement. Partitions can be placed where they are most desirable because framing can be adapted to any architectural layout. Concrete frames and floors can be designed for any structural requirement or for any type of job. They are ideally adapted to schools, hospitals, apartments, hotels, factories, stores and office buildings.

Dearborn Homes (above) in Chicago on State Street between 26th and 30th Streets is a typical example of concrete frame and floor construction. This apartment project consists of 800 units in 16 buildings. Four buildings are 9 stories and 12 are 6 stories in height. Loebl, Schlossman & Bennett are the architects, Frank A. Randall & Sons the structural engineers and S. N. Nielsen Co. the contractor.

Our technical staff will gladly help architects and engineers attain the highest quality concrete and the maximum structural advantages of reinforced concrete construction for any building project.

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CP-20 Sump Pump operates from a 60 c.f.m. compressor. At 40 pounds pressure against a 15-foot head, its capacity is 200 gallons per minute. Operating from a 105 c.f.m. compressor at 80 pounds pressure against a 50-foot head, its capacity is 225 gallons per minute.

It is a single-stage centrifugal pump that requires no priming—starts pumping instantly when air is turned on and the unit lowered into water. For full details write for SP-3017.

New CP-337 Triplex Backfill Tamper—three CP Tampers on a Gunderson-Taylor mounting—enables one man to do the work of four single tampers . . . faster and with more uniformity. Handles higher lifts than single tampers, so that greater thickness of fill can be compacted to specifications.

The Triplex walks easily over the fill. Wheelbarrow type handles make the 140-pound unit easy to guide; smooth tamping action of the three tampers makes unit easy to hold.

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DEVELOPMENTS ABROAD

PUERTO RICAN HIGHWAY—A view of a section of the two-lane concrete highway in the mountainous interior of Puerto Rico, skirting the town of Cayey, and ribboning the plateau in the southeastern section of the island. It is part of the principal arterial link between the north and south coasts of Puerto Rico.—Hamilton Wright photo.

Reveal plans for paving Pan-Am. road through to Panama Canal Zone

It has been revealed by Edward Miller, Jr., assistant Secretary of State for affairs of the American republics that plans for completion of the Pan-American highway with paving all the way to the Panama Canal are almost ready.

Since the completion of the Mexican section of the highway this year only two major stops remain unfinished between the U. S. border and the Canal Zone. These are a 50-mile stretch through difficult terrain in northern Guatemala and a 150-mile section in Costa Rica which has proved practically unworkable for road-builders of that country.

A bill is now before Congress to appropriate $64,000,000 to finish the road and pave it, but owing to the military situation the fate of this proposed legislation is in doubt. But if it does pass in its present form $8,000,000 a year will be made available for eight years.

The work to be done in Costa Rica is said to be the most difficult road construction ever to be attempted on the American continent. During the last war U. S. Army engineers worked on that stretch, but did not finish it on account of the great difficulties they encountered.

Tourists from the U. S. to Mexico may soon find available a fourth possible highway entrance to Mexico from the U. S., a road which will link up with the Pan-American highway next year.

The new route, which will be entirely paved and available for traffic by the early part of next year, according to the Mexican government authorities, will join the U. S. highway network at Eagle Pass, Tex., and will allow tourists to go to Mexico City via Saltillo, San Luis Potosi, Guanajuato and Queretaro, instead of the more familiar route from Laredo, Texas, to Monterrey, Mexico, and on to Mexico City.

Entrances to Mexico by paved highway from the U. S. now are via Laredo, via Eagle Pass, via El Paso, and via Brownsville, all in Texas. Work on the epic Mexican Pacific coast highway which will link up with Nogales, Arizona south of Tucson, is continuing, but will probably not be finished before 1952.

Israel road building—Israel is planning an expenditure of $7,000,000 this year to keep up 1,280 miles of existing roads and to build 70 miles of new highways. About 3,500 workers are employed in this work.

More electricity for Greece—Work is starting on a plan to increase the installed electrical capacity in Greece by 165,000 kwh. by means of one thermal and three hydroelectric plants. Some 650 miles of 150,000-volt transmission lines will be laid and about 25 step-down stations will be built. Total cost is estimated at $80,000,000, about one-fourth of which will be provided, in dollar currency from Marshall Plan funds.

Public works and housing projects in Puerto Rico

A public improvements program for the fiscal year 1950-51 has been started by the Department of the Interior of Puerto Rico with appropriations amounting to $12,180,000. The projects include construction of primary and secondary roads at a cost of $5,595,000.

Puerto Rico Housing Authority is asking bids for the construction of a large public housing development program to be undertaken under the terms of the 1949 National Housing Act. The program calls for the construction of 11,000 units, at an estimated cost of $50,000,000 during the next two years. The estimated cost per unit is $4,600.

In addition to the above program, the Puerto Rico Housing Authority expects to get allocations of Federal funds to build about 2,000 units in the non-farm housing Federal program, to increase the number of units to 15,000 during the next two years.

The largest project to be undertaken by the Puerto Rico Housing Authority consists of 900 units, for the San Jose Development project, at Hato Rey.

The Municipal Housing Authority of San Juan has announced a program for the construction of 2,800 units, and bids have already been advertised for the construction of the first project at Borda Farm, consisting of 882 units.

U. S. city planners to help Sao Paulo

About twelve city officials and government experts are going singly to Sao Paulo, Brazil, on their own time, to help that city survey its public improvements.

Heading the group is Robert Moses, N. Y. City Construction Coordinator, Park Commissioner, member of the City Planning Commission, chairman of the Triborough Bridge and Tunnel Authority and head of the Long Island State Park Commission. Others are Sidney Bingham, chief of the N. Y. City Board of Transportation; Dr. Richard Gould, Col. Wm. S. Chapin, Arthur Hodgkiss, Dean Thorndike Saville of the school of engineering, New York University, and William Latham.

The Mayor and city council of Sao Paulo extended the invitation through the International Basic Economic Corporation and the International Basic Economic Technical Service, of which Nelson Rockefeller is chairman. Sao Paulo has asked the Finance Ministry for approval of $90,000 to retain the group.

MUNICIPAL AFFAIRS

FOUR LARGE BRIDGES connect the twin cities of Little Rock and North Little Rock across the Arkansas River, making a metropolis in the heart of a state rich in natural resources and a progressive and energetic population.

Little Rock hospital building amounts to $20,000,000

Already well established as the hospital center of Arkansas, Little Rock is now watching the construction of some $20,000,000 of new hospital facilities. These, including a new Veterans Administration facility, are a part of a general building boom that keeps pace with the city's growth.

Engineering of this kind, of course, is no novelty to citizens. Greater Little Rock is made up of Little Rock and its sister city of North Little Rock across the Arkansas River, joined together by four major bridges. It is hub of 11 principal routes of three major railroads, ten important through highways, and three airlines.

Struggling to contain a population jumped nearly 15 percent (from 88,039 in 1940 to an estimated 101,400 in 1950), the city's builders have been working at a rapid pace in an attempt to build new housing and new facilities. New water supply, sewage disposal facilities, street improvements are all a part of current programs.

Its $5,000,000 State Capitol building is a replica of the national capitol at Washington, D. C. Some of the other outstanding edifices in Little Rock are the Robinson Memorial Auditorium, the Territorial Capitol Restoration Center, the War Memorial Building, the $1,500,000 Senior High School, and St. Andrews Cathedral.

Boosters consider the future assured because of its central location in a region of great but not entirely developed natural resources. A single example is bauxite from which aluminum is made. About 95 percent of all the bauxite in America is found near Little Rock in Pulaski and Saline counties. During the last war, a $50,000,000 plant was built at Hurricane Creek. It is now operated by the Reynolds Metal Corp.

Garbage grinders thumbed down in controversy

Household garbage grinders lost out in one Connecticut city last week after a battle-contested city council battle. The defeat was top news in a week of municipal disposal developments that included proposals for compulsory expansion of municipal sewer use systems and for treating sewage.

• **Garbage disposal**—Greenwich, Conn., outlawed household garbage disposal units. City officials decided that the units were taxing capacity of the disposal system.

The debate came to a head at the recent Connecticut Conference of Sewage Works Superintendents and Operators.

Speaking for the units, William S. Wise, chief engineer for the state department of health, said: "You can't pass ordinances that stop progress. It is up to the engineers to face this problem and to provide a solution."

On the other side, "One department towns on inventions of this type," declared J. Henry L. Giles, sanitary engineer of the state department of health. "They will overtax the already limited capacity of sewage treatment plants."

A suggestion has been made that householders be taxed for garbage grinders. The money would eventually go for the enlargement of sewer facilities.

• **Compulsory expansion**—Pointing up another municipal problem, the Texas State Department of Health threatened legal action against Waco. State officials told the city to expand and rehabilitate its sewage treatment plant, otherwise the city would be subject to prosecution under the state anti-pollution laws.

Waco is now half way along on a $400,000 sewage project. When finished, sewage collection facilities will be available to about 70,000 people. But another 10,000 will not be served, despite the city's effort to cope with rapid and somewhat unexpected growth.

City officials are now trying to find ways to raise money.

And because of demands of the Oregon State Sanitary Authority, city development plans for Salem, Ore., now call for an $800,000 disposal plant as part of a 10-year program.

At Boston, the city council has suggested that the building of a $10,000,000 sewage plant be turned over to the Metropolitan District Commission, and that it be built on one of the islands in Boston Harbor.

Mandatory legislation now stipulates that the plant should be built by the city in the Dorchester district.

• **Government guarantees**—In Ontario, Canada, more than $23,000,000 a year is now being spent on new water and sewage work, according to the government-created Municipal Improvements Corporation. The agency said that more than 700 certificates are issued a year, MIC guaranteeing the debentures. Some 20 towns are undertaking sewage programs this year, and 42 have or are in the process of installing water systems.

• **Financing**—Akron, Ohio, is considering floating a $5,000,000 bond issue for new sewers. This would take care of only the urgent needs, according to Luther Lame, sewer engineer for the city. Some areas in Akron have no sewers. Others are poorly served.

Residents will share nine-tenths of the cost of a $2,000,000 storm sewer project in Lucas County and Toledo, Ohio. It forms the largest part of a $10,000,000 five-year sewer program approved by the city council.

And a similar program—$11,000,000—is expected to get under way this fall in East St. Louis, Ill. The city plans the sale of $2,500,000 of general obligation bonds to meet its share of the expense. The East Side Levee District Board will finance the trunk line sewer project with a bond issue of $4,000,000.

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TUDOR PLAZA

Tudor Plaza, one of the newest additions to the quiet, tree-studded Delaware Avenue section of Buffalo, N. Y., stands 9 stories high, and has facilities for 68 families. The attractive, fire-retardant building is co-operatively owned, and its apartment units vary in size from 1½ to 9 rooms, including two spacious penthouse apartments. The structure also has a 65-car detached garage.

Tudor Plaza has an abundance of windows, and a neat-looking facing of rustic brick, beneath which stands a steel framework of Bethlehem Structural Shapes.

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EDUCATION and RESEARCH

ATOM SMASHER—When the bevatron (big younger cousin of the cyclotron) goes to atom smashing in this building on the University of California's Berkeley campus, protons are expected to bombard targets with a force of 6,000,000,000 electron volts. The machine, which will have a 100-ft diameter magnet, is being constructed under a $9,000,000 Atomic Energy Commission allotment. Engineering on the project was done by Masten & Hurd, San Francisco; Pacific Coast Builders have the general contract, and Consolidated Western Steel Corp. is doing the steel fabrication and erection. The dome-shaped structure on the hill at the left is the cyclotron which was completed in 1942. (ENR, April 9, 1942, vol. p 536)—U. S. Steel Co. photo

New buildings under way at engineering schools

Extensive college building construction now under way includes a number of structures for science and engineering.

Western Reserve—Announcement has been made by Western Reserve University, Cleveland, Ohio, of the awarding of a contract to the George A. Rutherford Co., general contractors, for the building of the School of Applied Social Sciences to be located on the east side of Abington Road, south of Euclid Avenue on the university campus. The plan assures the utmost in a functional building. Prismatic glass blocks will be used in the upper part of the windows to deflect light to the back of the classrooms to achieve maximum lighting. Construction on the $375,000 structure will begin this summer. The building is expected to be completed before the end of the 1950-51 school year.

Manhattan—A contract has just been let for a $1,000,000 science building on the campus of Manhattan College, Riverdale, N. Y. City, to be completed next year. The new plant, a two-story engineering building, will supplement the present physics laboratories and the research work of the engineering school.

Danville, Va.—Nearing completion is the first of the Virginia Polytechnic Institute Extension buildings going up on the campus of Danville Technical School. The building will be devoted to engineering classrooms, machinery halls and laboratories.

Alabama Poly—With a $1,000,000 building program under way at the Alabama Polytechnic Institute, Auburn, Ala., another $3,685,000 of campus construction is now being planned. At present under construction is a $500,000 architecture and allied arts building, a $400,000 general education building and a $115,000 service building. There are also planned, a $1,000,000 men's dormitory for 400 students, six women's dormitories for 575, and more than $1,250,000 of kitchen and dining hall facilities for women students. In addition, a $1,000,000 union building is planned together with structures for engineering, pharmacy, food service, dairy and administration offices.

Educational Notes

European technicians at M. I. T.—Advanced research at the Massachusetts Institute of Technology has been made possible this summer for 36 young European scientists and engineers by the Economic Cooperation Administration. Under the technical assistance program, qualified technicians from industry, government, technical centers and universities in 12 Marshall Plan countries are working on projects which will further European economic recovery. Together with 37 other students from abroad, the ECA-sponsored group is participating in MIT's third Foreign Student Summer Project. The work is organized and conducted by the student body with assistance from the faculty and administration. Tuition fees are waived. Other expenses were covered in 1948 and 1949 through contributions from business, foundations, and private individuals. This year ECA is paying $18,900 to cover living expenses of 36 of this group of foreign students.

Cost accounting for homebuilders—Development of a standardized cost accounting system for possible use by homebuilders is the objective of a study to be made by the University of Michigan, under the HHFA housing research program. A study will be made of small and large unit housing projects, including prefabs. It is expected that the results will enable builders to forecast costs more precisely and compute capital requirements more accurately.

City planning course—Rutgers College of Engineering, New Brunswick, N. J., will graduate its first city planners next June. Combining engineering, sociology, political science and economics, Rutgers students in this course learn enough about all of these subjects to be able to co-ordinate them in their work. The planning majors combine classroom theory with work in the field in nearby communities.

Scholarships—Ralph E. Mills of Frankfort, Ky., through the Ralph E. Mills Foundation, has renewed a scholarship in the College of Engineering, University of Kentucky, and the Kentucky Association of Highway Contractors has also renewed a $500 engineering scholarship at the same institution.

Faculty changes—New appointments at the College of Engineering University of Florida include: Ellwood Hendrickson, associate professor of civil engineering and associate research engineer for the engineering and industrial experiment station; Theodore Jatte, interim assistant professor of civil engineering; Chas. E. Cutts, associate professor of civil engineering and associate research engineer; Walter H. Zimpfer, assistant professor of civil engineering and assistant research engineer; and A. Philip Welch, assistant research engineer.

Puerto Rican engineers—The College of Agriculture and Mechanics Arts of the University of Puerto Rico at Mayaguez, P. R., reports that a total of 144 engineers were graduated on June 5, 1950. Out of this total, 93 are civil engineers.

ELECTIONS AND ACTIVITIES

Robert Patton, of Charlotte, N. C., executive secretary of the Carolinas Branch of Associated General Contractors, has been named managing director of the branch. James E. Poe, of Charlotte, former assistant executive secretary, has been named manager of the Building Contractors Division, and S. C. Austin of Raleigh, N. C., also a former assistant executive secretary, has been named manager of the Highway and Road Contractors Division. The appointments are a result of increasing membership of the organization, which recently merged with the Carolinas Road Builders Association. Expansion of office facilities in Charlotte, Greensboro, N. C., and Columbia, S. C., also has been made necessary by the growth of the group.

An operating charter for 57 members of the American Society of Civil Engineers in Maine was recently presented to the group. The Maine engineers have been working 15 years for national recognition. Neal McDowell, highway engineer for the U. S. Bureau of Public Roads at Augusta, and Hamilton Gray, professor of civil engineering at the University of Maine, head the recent efforts. Among other backers are: Miner Stackpole, district engineer, U. S. Geological Survey; Elmer W. Campbell, director of the State Division of Sanitary Engineering; Bryant L. Hopkins, hydraulic engineer of the Kennebec Water Power Company and secretary of the State Registration Board for Professional Engineers; W. S. Evans, professor of civil engineering at the University of Maine; and Willis G. Platt, construction engineer, Oxford Paper Company of Rumford.

Chicago's younger home builders have formed the Junior Home Builders of Chicagoland, described as the first organization of its kind in the country. A constitution and bylaws have been adopted and officers will be elected Sept. 12. The group has been given a charter by the Chicago Metropolitan Home Builders Association.

Ross H. Reynolds of Raleigh was nominated for the presidency of the North Carolina Society of Engineers and is scheduled to be elected at the group's winter convention. Also nominated were J. Hamilton L. Hicks of Wilmington and E. L. Betts, of Laurinburg, for vice president; L. C. Kerr of Clinton and Melvin Swartz of Greenville, for director of District 1; D. D. Davis of Durham and George B. Cherry of Raleigh, for director of District 2; Worth B. Baldwin of Greensboro and Charles M. Sprinkle of Winston-Salem, for director of District 3; and John C. Walker of Asheville and M. K. Cannon of Charlotte, for director of District 4.

CALENDAR

N. Y. section AWWA, fall meeting, Saratoga Inn, Upper Saratoga Lake, N. Y., Sept. 7-8.

South Dakota Reclamation Association, convention, Pickstown, Sept. 10-11.

Conference on "Ground Facilities for Air Transportation," Massachusetts Institute of Technology, Cambridge, Mass., Sept. 12-14.

Canadian Institute on Sewage and Sanitation, annual convention, Ingwin Inn, Ontario, Sept. 13-15.

W. Va. section AWWA, annual meeting, Pritchard Hotel, Huntington, W. Va., Sept. 13-14.

Convention of Roadmasters' and Maintenance of Way Association, and the **American Railway Bridge and Building Association**, Hotel Stevens, Chicago, Ill., Sept. 18-20.

New England Water Works Association, Poland Springs, Me., Sept. 18-21.

American Society of Photogrammetry, Harvard Graduate School, Cambridge, Mass., Sept. 21-22.

Building Research Advisory Board, Research conference, National Academy of Sciences, Washington, D. C., Sept. 25.

Pennsylvania Water Works Association, Claridge Hotel, Atlantic City, N. J., Sept. 26-29.

Rocky Mountain Sewage Works Association, La Fonda Hotel, Santa Fe, N. M., Sept. 27-29.

South Dakota State Association of County Commissioners, Auditors, Highway Superintendents and State Highway Officials, annual convention, Cataract Hotel, Sioux Falls, Sept. 28-30.

National Council of State Boards of Engineering Examiners, Congress Hotel, Chicago, Ill., Oct. 9-11.

ASCE, fall meeting, Congress Hotel, Chicago, Ill., Oct. 11-14.

Public Works Congress and Equipment Show, 9th Regiment Armory, New York City, Oct. 15-18.

Water conference, Engineers' Society of Western Pennsylvania, Hotel William Penn, Pittsburgh, Pa., Oct. 16-18.

National Association of Housing Officials, Detroit, Mich., Oct. 16-18.

National Conference on Industrial Hydraulics, Sherman Hotel, Chicago, Ill., Oct. 18-19.

Pennsylvania section, AWWA, Roosevelt Hotel, Pittsburgh, Pa., Oct. 18-20.

Engineers' Council for Professional Development, Tudor Arms Hotel, Cleveland, Ohio, Oct. 20-21.

National Public Health Engineering Conference, University of Florida, Gainesville, Oct. 23-27.

Structural Clay Products Industry, Broadmoor Hotel, Colorado Springs, Colo., Oct. 23-26.

American Institute of Steel Construction, Shamrock Hotel, Houston, Tex., Oct. 23-26.

American Concrete Institute, Mayflower Hotel, Washington, D. C., Oct. 24-26.

Carolinas Branch, A.G.C., White Sulphur Springs, W. Va., Oct. 20-21.

Just Out

THE EFFECTS OF ATOMIC WEAPONS

I. Here is a timely survey prepared under the direction of the Los Alamos Scientific Laboratory that presents the results to be expected from the detonation of atomic weapons. The book covers every technically interested person—municipal authorities and utility engineers, and is an authoritative study of the effects of this enormous energy release when used as a weapon in war, as a basis for the development and administration of protective measures for personnel and property. It covers the principles of atomic explosion, includes a description of an atomic explosion, and discusses physical damage to by air blast, ground and underwater shock, thermal radiation, initial effects on personnel. Prepared for and in cooperation with the U. S. DEPT. OF DEFENSE and the U. S. ATOMIC ENERGY COMMISSION. 456 pages, $7.00.

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MEN AND JOBS

Walter A. Schwarz, until recently resident engineer at Dorena Dam, unit of the Willamette Basin Project in western Oregon, retired from the Corps of Engineers recently after 16 years of government service. Before joining the Corps of Engineers he was a district engineer with the Washington State Highway Department, camp superintendent for the forest service, and director of operations for WPA in Washington State.

Dodson, Kinney & Lindblom, a new engineering firm, has been organized with offices at 5 E. Long St., Columbus, Ohio, by Robert K. Dodson and C. F. Lindblom and A. M. Kinney. Latter heads the Cincinnati engineering and architectural firm of A. M. Kinney, Inc., giving the Columbus firm representation in Cincinnati and New York City. Dodson is a graduate of the University of Kentucky and served as chief hydraulic engineer with the U. S. Corps of Engineers in Cincinnati until 1946. For the last three years, he has directed water conservation and flood control projects for the Scioto-Sandusky Conservancy District at Columbus. Lindblom is a graduate of the University of Cincinnati, serving for 17 years with the U. S. Corps of Engineers in the Cincinnati office, and joining the Scioto-Sandusky Conservancy District as assistant chief engineer in 1947.

With Narrows Dam in Arkansas as a backdrop, an inspection quartet of federal officials is caught by the cameraman. They are (l to r): R. C. Wasder, resident engineer on the project; E. D. Peterson, chief of the Civil Works Branch, Bureau of the Budget; Gen. Peter A. Ferruga, president of the Mississippi River Commission; and R. C. Baker, chief of the Construction Division, Vicksburg District, Corps of Engineers.

Supervising the construction of the $18,000,000 Chain of Rocks Lock No. 27, on a cut-off canal of the Mississippi River above St. Louis are (front row, left to right): E. J. Leshe, field office engineer; Grey A. Allen, resident engineer for the St. Louis District, Corps of Engineers; and Geo. Rantanen, superintendent of construction for the River Construction Corporation. Back row, left to right: Erwin Schmidt, chief inspector; and R. J. Dunlap, project manager.

E. C. Thompson, resident engineer for the Tennessee State Highway Department, has been appointed division office engineer at Nashville. Thompson, who has served in various positions with the Department since September 1928, attended Mississippi A. & M. College. He succeeds **T. Murphy Payne**, who has held this position for the last 13 years, and has been advanced to senior district maintenance engineer with headquarters at Nashville.

D. J. Gore, of Wilmington, N. C., has been named superintendent of the municipal public works department at Fayetteville, N. C., succeeding James C. Hall, who died recently.

Halifax, N. S., has appointed **W. A. G. Snook** as town planning engineer and **Charles Day** as building inspector to replace **F. C. Thomas**, appointed division engineer.

Ernest P. Clark, former city manager of Ocala, Fla., has been named superintendent of the new water and sewage treatment plant now nearing completion.

Harold A. Linke has resigned as state engineer of Utah and has joined with **Win Templeton** of Salt Lake City in incorporation of the firm of Templeton and Linke, consulting engineers, with offices in the Dooly Building, Salt Lake City, Utah.

The Department of Public Works, Ottawa, Ont., has appointed **W. H. Hunt** of Winnipeg as supervisor engineer for the Saskatchewan Section of the Trans-Canada Highway, **Walter Youngman** of Winnipeg in a similar capacity for Alberta section, and **E. T. Wilson** of Winnipeg to supervise construction of the Manitoba section of the National Highway.

Clarence Windsor, Anderson, Ind., has been appointed planning engineer for the Indiana Economical Council. He has been with the U. S. Bureau of Roads and the Indiana Highway Department. He is a Purdue University graduate.

OBITUARY

Clifford A. Hahn, 61, a civil engineer and director of the Philadelphia regional office of the United States Department of Commerce, died at Philadelphia, Aug. 11. He was educated at Brown and Columbia Universities. He worked in an engineering capacity with the City of New York, American International Shipbuilding Co., Hog Island, Philadelphia; Stone and Webster, Inc., Boston, and the H. J. Heinz Co., Pittsburgh. He formerly was president and general manager of the Holtzer-Cabot division of the First Industrial Corp. in Boston.

Timothy E. Lowney, 82, construction engineer and builder of railroad and drawbridges in many sections of the United States and Canada, died Aug. 11 at his home in New Bedford, Mass. At one time he was superintendent of buildings for the Department of Education of New York City and later was appointed assistant resident engineer for the Public Works Administration of the State of New York.

Herbert N. Dawes, 78, for many years consulting engineer, died at Brookline, Mass., Aug. 14.

Richard Dukes, 70, dean emeritus of the graduate college and a member of the engineering faculty for 33 years at Purdue University, Lafayette, Ind., and his wife, Mrs. Mary Irene Dukes, 60, were killed in an automobile accident at Alton, Ill., recently. He had retired in 1942. He attended DePauw University, the Massachusetts Institute of Technology and Cornell University, having been graduated from the latter in 1898. He taught at Worcester Polytechnic Institute, Worcester, Mass., Cornell University, and at the Case School of Applied Science. He joined the Purdue engineering staff in 1909, and became dean in 1917.

John W. Snyder, 81, president of John W. Snyder and Co., Chicago, Ill., who erected the Chicago Stadium, the University of Illinois college of medicine and dentistry, the atomic research building of the University of Chicago, and the Goldblatt Memorial hospital, died Aug. 7.

William S. Rhodes, 79, retired civil engineer who was attached to U. S. Army duty for many years, died at Roslindale, Mass., on Aug. 13. He was a graduate of the Massachusetts Institute of Technology.

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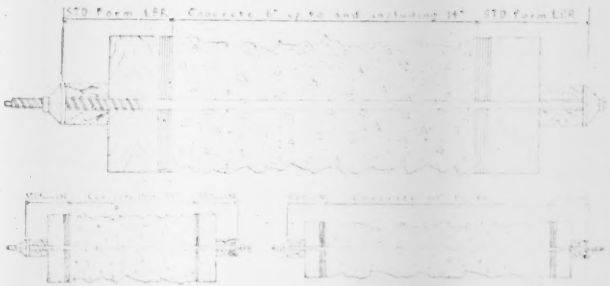

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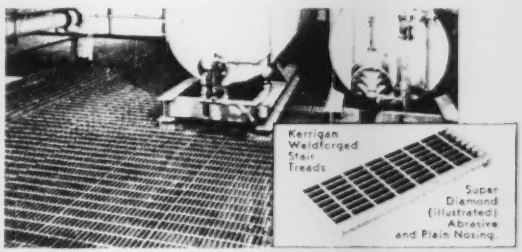

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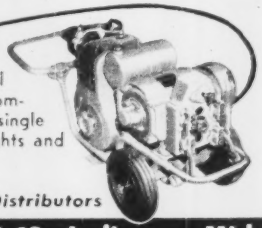

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Otto K. Jelinek, 50, president of the Illinois section of the American Society of Civil Engineers and former planning engineer for the Chicago Park District, died Aug. 18 in Brussels, Belgium. He was chiefly responsible for developing Chicago's Lake Shore Drive. He invented the disappearing traffic line separators in the drive. Joining the Park District as a rodman in 1921, he was made chief traffic engineer in 1950. He solved the traffic problem at the 1933 Century of Progress exposition. After the war he had charge of developing a $24,000,000 small parks program. He left the Park District in 1940 to join Ralph H. Burke in designing the city's airports. He studied at the former Armour Institute of Technology.

Charles H. Warren, 75, dean emeritus of the Sheffield Scientific School at Yale University, died Aug. 16 in Torrington, Conn. His home was in Litchfield, Conn. He was graduated from Yale in 1896 and was on the faculty of the Massachusetts Institute of Technology from 1900 to 1922. In the latter year he went to Yale as dean of the Sheffield School, professor of geology and chairman of the department of geology. He later became professor of mineralogy and was widely known for his writings in that field. He retired in 1945.

Henry A. Allen, 83, World War commander of Chicago's 108th Combat Engineers and former engineer for the city, died Aug. 18. Colonel Allen was in charge of Chicago's water-pumping stations from 1912 until his retirement two years ago, with the exception of the time in the Army. He was graduated from the U. S. Naval Academy in 1887. He spent two years in the Navy and then became a water engineer in Hawaii for the Allis-Chalmers Mfg. Co. In 1907 President Theodore Roosevelt appointed him to a group charged with making the final estimate of the time required to complete the Panama Canal.

Chester L. Post, 70, a consulting engineer for the U. S. government, died in Washington, D. C., Aug. 21. Recently he had worked on the White House renovation, the new Public Health Clinical Center, and the General Accounting Offices, and was to have retired in a few days. He had civil engineering degrees from Rose Polytechnic Institute, Terre Haute, Ind. He was an Army engineer in the first world war. At one time he was a partner in the firm of Condron and Post, Chicago.

UNIT PRICES BID BY CONTRACTORS

Drainage improvements in Russell, Kansas

A low bid of $6,843, 57% below the engineer's estimate, was received by the city of Russell, Kan., July 12, 1950, on drainage improvements. All four bids were under the estimate with the low bid 10.7% below second low and 28% below the high. Wilson and Company, Salina, are engineers.

Work started August 1 and must be completed by September 15. It includes furnishing all labor, materials and equipment for constructing storm sewer pipelines complete with reinforced concrete manholes and inlets. These improvements are on Culp St. from Fourth to Wisconsin, and on Elm St. extending each way from the intersection with Fifth St., all within a mile of rail facilities.

Wage rates prevailing are for skilled labor, $1.50 an hour, and for common labor, $1.00. Bidders were:

1. David Schwartz, Russell (contract) $6,843.50
2. Burt & Binford, Hutchinson 7,663.50
3. Inland Const. Co., Wichita 8,230.66
4. Diamond Fuel Co., Grand Island, Nebr. 9,501.45

Engineer's estimate 10,852.50

Items	Quan. Qty	Unit prices 1 ¢	2
Excav. undet.	cy	300	$1.50	$1.00
Comb curb & gutter	lf	90	2.00	4.75
Conc sidewalk, 4"	sf	50	.50	.35
Cor metal pipe, 18"	lf	36	2.50	3.00
Storm sewer, 18" RCP	lf	39	2.50	3.00
24" RCP	lf	124	3.75	4.75
42" RCP	lf	326	8.50	9.50
Inlet, No. I	ea	1	110.00	250.00
Inlet, No. II	ea	1	160.00	300.00
Manhole, Type M	ea	2	95.00	200.00
Reloc corr drain pipe	lf	88	1.50	2.00
Brick pav, cut & repl	sy	10	5.00	5.00
Remov sidewalk	sf	50	.10	.10
Remov curb & gutter	lf	90	.25	.20

Concrete pavement, Oakland County, Mich.

Five bids, 23.3% apart, were received June 29, 1950, by the Michigan State Highway Department on 5.025 miles of concrete pavement in Oakland Co. The low bid of $418,752 was 0.5% below the next to low bid.

The work is in Royal Oak and Troy Townships. It extends from existing M-150 near Eleven Mile Rd. northerly on relocation to present M-150 near Sixteen Mile Rd. at the village of Big Beaver.

This job, consisting of grading, drainage structures and 22-ft and 40-ft concrete pavement, 9-in. uniform, must be completed by December 31. Work started 10 days after notice of contract award. The contractor must maintain traffic by part width construction and bridges over pavement.

Wages to be paid on power equipment operators, $1.825-2.275; cement finishers and form setters, $2.125; pipe layers, $1.875; cement handlers, $1.625; unskilled laborers, $1.575.

Class A culverts used at drives include reinforced concrete culvert pipe and sewer pipe, corrugated metal pipe and reformed pipe, encased tile, cast iron pipe, non-reinforced concrete culvert pipe and extra strength vitrified clay pipe. Class B culverts used under the highway include reinforced concrete culvert pipe, encased tile and cast iron pipe. The catch basins specified in the unit prices below are identified by figure and letter. The figure designates the masonry detail of the structure. Type 5 basin is 2 ft in diameter at the top and 4 ft at the bottom while type 6 is 2 ft in diameter throughout. The letter indicates the type of cover to be used. "S" means side inlet. Bidders include:

1. Cooke Contract Co. & Louis Garagiola, Detroit (contract) $418,752.10
2. Julius Forath & Son Co., Detroit 430,765.21
3. L. A. Davidson, Lansing 545,103.25

Items	Quan. Qty	Unit prices 1 ¢	2
Clearing	ac	5	$100.00	$120.00
Grubbing	ea	344	1.50	1.25
Remov trees				
6" to 12" diam	ea	44	20.00	20.00
13" to 24"	ea	44	40.00	40.00
25" to 36"	ea	11	60.00	50.00
37" and more	ea	3	150.00	75.00
Old pav, remov	sy	4,405	1.00	1.00
Sidewalk, remov	sy	44	1.00	1.00
Masny, conc rem	cy	110	8.00	10.00
Catch basins, remov	ea	2	25.00	25.00
Abandon	ea	2	25.00	25.00
Earth excav	cy	121,539	29	25
Overhaul	cymi	161,175	15	15
Potomac backfill, Grade B (loose meas.)	cy	1,001	2.50	3.00
Gravel, 3A cone	cy	1,001	45.00	50.00
Steel reinf	lb	9,111	10	09
Culverts				
12" CI A	lf	198	2.00	2.00
15" CI A	lf	24	2.25	3.00
18" CI A	lf	24	3.00	4.00
12" CI B	lf	342	2.20	2.10
18" CI B	lf	468	3.00	3.00
24" CI B	lf	220	4.50	4.00
30" CI B	lf	236	6.50	7.00
42" CI B	lf	64	10.00	8.50
48" CI B	lf	60	14.00	10.00
12" cor metal pipe	lf	12	2.00	2.50
48" cor metal pipe	lf	20	3.50	3.50
Sewer open jts	lf	5,479	1.00	.80
12" sewer	lf	901	1.65	2.10
15"	lf	1,432	2.00	3.00
18"	lf	251	2.75	4.50
24"	lf	260	4.00	7.50
Manholes IA	ea	9	150.00	200.00
Catch basins, 3-E	ea	7	150.00	160.00
3-G	ea	3	140.00	160.00
3-S	ea	3	150.00	160.00
6-E	ea	1	140.00	150.00
6-E	ea	7	140.00	150.00
6-G	ea	1	140.00	150.00
Adj manhole cov	ea	2	50.00	30.00
Adj catch bsn cov	ea	1	50.00	30.00
Manholes, reconst	ea	3	180.00	200.00
Catch bsn, reconst	ea	1	180.00	160.00
Fine grad, cleanup	sta	302	15.00	20.00
Conc curb, gutr detail 2 (Mod)	lf	501	2.50	2.50
Conc roll curb & gutr, det 6	lf	300	2.00	2.00
Conc pav, 9" uniform	sy	20,222	3.15	3.50
8" uniform	sy	1,360	3.10	3.20
7" uniform	sy	1,155	3.00	3.00
Pav reinf	sy	22,197	46	45
Agg approach (loose meas.)	cy	2,032	2.25	3.00
Bit approach mix	lf	628	12.00	11.00
Conc curb header	lf	127	3.00	2.50
Stab earth slides	sta	604	3.00	2.00
Shoulder borrow	cy	6,356	.50	.50
Water for wetg	Mgal	16	3.00	20.00
Topsoil surf	cy	7,992	.50	.50
Plain riprap	cy	13	10.00	5.00
Cable guard rail	lf	200	1.50	2.50
Braced end panels	ea	4	30.00	20.00
Guard posts	ea	31	3.00	4.00
Sod, CI B	sy	1,327	.36	.40
Markers, fld proj	ea	2	25.00	30.00
Conc end of way	ea	50	10.00	10.00
Bridge over pav	ea	2	100.00	400.00
Part width const	sta	9	50.00	50.00
Part width const (per inter.)	ea	2	150.00	300.00
Oblit old road	ac	1	150.00	100.00
Final trim, clean up	sta	9	15.00	20.00

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SINGLE-ACTING STEAM

PILE HAMMERS

Tough piles tame quickly when Warrington - Vulcan goes to work. It's a powerful, rugged hammer, built for heavy duty through and through, for economical trouble free performance year after year on the most difficult pile driving projects.

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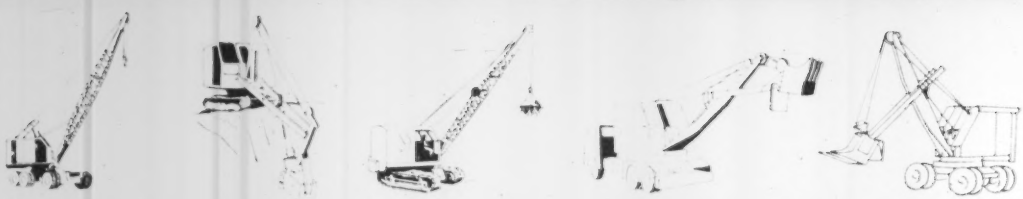
BAY CITY on a $10,000,000 job

FRANK STAMATO uses five hard-working BAY CITY machines to speed up New Jersey sewage project

A BAY CITY Model 30, ½ yd., 6½ ton crane with 35 ft. boom setting 1½ ton pipe sections.

A Model 15 T40 Crane-Mobile with clamshell and a ¾ yd. Trench-Hoe, excavating for sewer line.



A BAY CITY Model 45 working as a back-hoe, doing narrow trench excavation.

Frank Stamato & Co. of Lodi, N. J. is sold on the rugged dependability of BAY CITY equipment and proves it by using five BAY CITY machines on the 10 million dollar, 20 mile long Overpeck Valley Joint Sewage Project. The job calls for sewer excavation 4' wide by 14' deep, and the BAY CITY machines are exceeding every estimate as they turn in dependable trouble-free performance day after day. Contractors everywhere have found that, no matter how tough or how big the job, there's a BAY CITY to do it better. See your nearest BAY CITY dealer for further information on our complete line of cranes, shovels and material-handling equipment, or write us direct — BAY CITY SHOVELS INC., BAY CITY, MICHIGAN.

A BAY CITY Model 45 equipped with ¾ yd. bucket, removing excavated dirt from another section.

The CraneMobile is available in 5 sizes with crane capacities up to 25 tons. For complete details, write for catalog.

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.
ELSIE EAVES, Manager J. A. MAHONEY, Reports M. R. ROESSLER, Statistics

WATER SUPPLY

BIDS ASKED

La., Vinton (B.A. 9-6)—Town, Constr. sys. extens. concrete reservoir, pump, piping. Plans deposit $25. Carnegie & Smith, engrs., 200 A Dalrymple Dr., Baton Rouge, engrs. CD 11-21-49.

Mo., St. Louis (B.A. 9-5)—City, Frank McDevitt, pres., Bd. P. Serv., 314 City Hall, 12 and Market Sts., Inter-state alterations at Chain of Rocks Water Works Station on Mississippi River, $25,000. Dept. P. Serv., Thomas J. Dewire, water comr. CD 6-22-50.

La., Gretna (B.A. 9-4)—Fourth Jefferson Drainage Dist., Jefferson Parish, pump, Stations 1, 2, 3 and 4 alterations, additions as shown on Lake Pontchartrain, Plans deposit $15. Leon W. Thompson, 247 N. Peters St., New Orleans, engr.

La., Metairie (B.A. 9-6)—Jefferson Parish Comm., Lake Pump Stations 1, 2, 3 and 4 in Sec. 6 of Lake Pontchartrain, Plans deposit $10. James E. Tidd & Assoc., 217 N. Peters St., New Orleans, engrs.

Mass., Cambridge (B.A. 9-6)—City, Dir. P. Wks., City Hall, ww improv. Fresh Pond Area, approx. $300,000. Plans deposit $25. Camp, Dresser & McKee, 6 Beacon St., Boston, engrs. CD 3-1-50.

Fla., Jacksonville (B.A. 9-7)—City, City Hall, water distr. sys. addns., extens. Plans 2 only, No. 2 Pump Sta. deposit $30. Reynolds, Smith & Hills, 277 Park St., engrs. CD 5-17-46.

Va., Lynchburg (B.A. 9-12)—City, improv. W. W. Plans deposit $50. Wm. S. Wilson, Lynchburg, engrs. Bids to be opened $224,446, est. $60,000, water proj. incl. $187,023. CD 7-31.

LOW BIDDERS

Mass., Needham—Town, P. Wks. Dist., Town Hall, water distr. sys. and storage, new water tank. Town Hall, Harry P. Warwick, jr., 46 Walnut St., $39,446. CD 5-21-46.

O., Toledo—Lucas Co. Court House, Water Dept., bridge, heights and 1 to 3 ft. Ave. ins. water mains, 1 to 8 in., extens. to serve Harbor View Addn., Sylvania Twp., for supply mains, hydrants, valves and Lucas Co. Water Dist. and service to Fort Industry Constr. Co., Woodville. $28,045. CD 6-22-50.

Pa., Norristown—Suburban Water Auth., Lloyd Mine St., pumping station, Arcola Rd., Whitpain Twp., Montgomery Co., Norristown State Hospital, Aug. 15, Plans from Clark & Rambo, 1500 Walnut St., Phila. $308,540. Lloyd Mine Road, Harrison Ave., Lansdowne, $30,903, excluding Ave. & Assoc., 1420 Walnut St., Phila., $61,000. CD 7-24-50.

Tex., Marfa—City, water sys. impr., $43,572. Pierce & Hawk, 1641 Broadway, Lubbock, engrs.

CONTRACTS AWARDED

Colo., Denver—Jefferson County, City and County Bldg., alterations to courthouse, core and roof, concrete pile foundation for Tom Mullan Elevator addition to W. 14th Ave. and Jason St., Denver, to Mullan Elevator Co., Denver, $194,114. [illegible] to ft. to in. Ave. and Delaw[illegible] Denver, $556,746, and $126,351 [illegible] awarded to [illegible]

▲ Tex., Dallas—City, water sys. impr., incl. 4 elevated storage tanks, 1 ground storage reservoir, 1 pump station, 1 filter plant, 1 chlorinator station, 1 booster station, 1 water softening plant, 1 lime sludge disposal plant, 1 lime kiln, 1 recarbonation plant, 1 sewage treatment plant, 11 sewage gathering facilities, Contr. 2. Plans deposit $25. Robert W. Kelley, 16 Bay Villa Dr., Baytown. Consult engr. CD 4-25-50.

D. C., Wash.—(B.A. 9-1)—Govt. of D. C., Director Sanitary Engr., District Bldg., 14 and E Sts. N. W., Zone 4. Sludge drying and incinerating equipment, sewage treatment plant, Blue Plains. Plans deposit $50; ea. set. CSR 8-17.

Pa., New Cumberland—(B.A. 9-15)—New Cumberland Boro. Auth., Bd. Supvrs., primary sewage treatment plant, Auth. Bldg., separate dge. digester, heavy settling tanks, tie-ins to new and present sewers, new sewage pumping station, heating, and electrical work. Plans deposit $25; constr. approx. 1,214,629 ft. sewers, ranging from 6 to 18 in., and manholes, appurtenances. Plans, deposit $25; each. Leon W. Ulsh, 1001 N. Front St., Harrisburg, engrs. CD 1-27-49.

Calif., Burlingame—(B.A. 9-15)—City, City Hall, sewage treatment plant, incl. 3 digester units, settling tank, new sludge facilities, and chlorination equipment, plus sewage pump station and force main. Plans deposit $25. Harry N. Jensen, engr. for City, 245 Hemlock St. Consult engr. CD 4-11-49.

Calif., Pomona—(B.A. 9-14)—City Council, 260 W. 4th St., (2) sewer improvs., 12,107 ft. reinforced concrete pipe sewers, 1,100 ft. 6 in. cast iron pipe sewers, sewage treatment plant remodeling, new sewage pump station, 2 alley, 1 concrete street. Plans deposit $25. Massey Engineers, Kasler Bldg., Riverside, engrs. CD 4-14-49.

▲ N. Y., New York—(B.A. 9-25)—Dept. P. Wks., Bureau of Bridges, Municipal Bldg., Manhattan, 1st Div. Bids, subsequent Deliveries, Plans, Specs., Contr. 6, structures and equip., $4,224,000; Contr. 7, electrical work, $260,000; Contr. 8, heating, ventilating, $74,000; Contr. 9, plumbing, $78,000. CD 11-18-46.

LOW BIDDERS

Mass., Brookline—Town Bd. Selectmen, August 15, sewer relocation outbreak from Newton St. to Town line, Contr. 1, $1,150,000; Contr. 2, $718,524. Water softening facility contract, 16 A. Avalon Dr., Brookline, engrs.

▲ Mass., Fall River—City Sewer Dist., Fall River Area, [illegible] sewage treatment plant, [illegible] $1,533,720

N. H., Laconia—City, City Hall, [illegible] Aug. 10, sewage treatment plant, Lake Winnisquam, [illegible]

Northern Constr. Corp., 588 Essex St., Lawrence, Mass., $600,000. CD 7-13.

N. Y., Poughkeepsie—Dist. P. Wks., State Office Bldg., Albany, general contract, plumbing and fire work on existing Bldgs. 79 and 104, at Hudson River State Hospital, from Brownell Constr. Corp., 154 Nassau St., New York, $57,148. Sanitary work, from Marian F. Coffey, 25-04 42 Rd., Long Island City, $274,990. Electrical work, from Dees Electric, Inc., 1 Delaware Ave., Albany. Heating contract, Geo. Gall & Son, 228 E. 16 St., New York, N. Y., $52,200.

Tex., Cockrell Hill—City, Aug. 11, sanitary sewerage sys. improv., sanitary sewer line extens. from 7 Bee Caves & Grove, 4216 Mince st., Dallas, $53,335 and $66,665 respectively. CD 7-31.

Wash., Seattle—City County City Bldg., Zone 4, rejected Bids Aug. 4 requiring sewers in W. Prospect and adjacent streets. L. B. $53,485. CD 8-15 under LB.

CONTRACTS AWARDED

Calif., Menlo Park—Menlo Park Sanitary Dist., 460 C St., Aug. 14, interceptor sewers, Lines 13, Manuel Smith, $213,005; to Bldg., Yolkand, $213,005; to M. A. Lynch, 2251 Revere Ave., San Francisco, and Albert B. McNair, 3745 Fruitvale Ave., Oakland, $222,962. CD 8-24.

Kan., Kansas City—Santa Fe Land Improv. Co., Kansas City, Mo., Sect. 1, sewer lateral concrete pipe and tile sewer, W. F. D. from Kansas City, Kan., to left, Bennett Realty Co., 1120 Central St., $469,439. Drake & Vestal, Wyan Dotte Bldg., Zone 2, engrs.

Ore., Salem—City, City Hall, sewage treatment plant to Willamette River, Business Exchange Bldg., $404,378. CD 8-2.

Tex., Kilgore—City, Kilgore addns. sanitary sewers, two lines, $210,000. CD 4-13.

BRIDGES

BIDS ASKED

D. C., Wash.—(B.A. 9-8)—Director Hys., District Bldg., 14 and E Sts. N.W., Zone 4, bridge on line of Alaska Ave. over Rock Creek in northeast area. CSR 8-31.

LOW BIDDERS

California—State Div. Hys., Sacramento, Aug. 17, Bids for structural steel and grading, paving and connections over Harbor Freeway at 41 St., Los Angeles, Co., from Dr. J. Distefano, 4814 West Jefferson Blvd., Los Angeles, $511,770. CD 7-24.

California—State Div. Hys., Sacramento, bridge and approaches at San Ysidro about 3 mi. southwest of Jacumba, Imperial Co., from C. Mercer Fraser Co., San Francisco, $104,911. CD 7-24.

Colo., Denver—City and County Co., City and County Bldg., Aug. 15, strengthening and enlarging Blake Street Bridge over Cherry Creek and approaches, incl. widening of 14 St. side of bridge Speer Blvd. to the widened, to make 4 43-foot roadways, from W. Colfax Ave. to Larimer St., 110 West 13 Ave., Denver, $58,808, est. $60,000.

Texas—State Hy. Comm., Austin, Aug. 16, superstructure for East Fork of Brazos River Bridge Hy. U. S. 180, Co. 243-1-1, Grant Co., from Harry Seaton, Inc., Graham, $71,542. Est. $77,000. CD 8-2.

CONTRACTS AWARDED

Maine—State Hy. Comm., Augusta, structural steel, Pleasant Ave. Crossing over Boston & Maine R.R., Portland, to Stephens & Co., Rockland, $46,153. Bids 8-16. CD 8-17.

N. J., Matawan—(B.E. Monmouth Co., Freeholders, Freehold)—Constr. The Bowne Rd. drawbridge over the Matawan Creek to Thomas Wyatt Co., Inc., 210 North Ave., Long Branch, $48,527.

+ Oregon—Bridge, Pile, Piling, Commercial, Wharves, Docks, Boathouse, Timber, Steel, Concrete, Marine Work, Contractors, Plans, Estimates, Bids, Oregon Steel Engineers, Portland, Ore., $127,641.

Washington—Bridges, Piling, Marine Construction, Docks, Wharves, Boathouses, Timber, Steel, Concrete, Plans, Estimates, Bids, Pacific Bridge Co., 1145 Pier 70, Seattle, Wash., and 1145 Pier 70, San Francisco, Calif., $68,905.

Alberta—Engineers of Alberta, Edmonton, concrete and steel bridges, Edmonton, Alberta, Canada, to Pitts Bros. Construction Co., Ltd., 2100 2 Ave., Calgary, $88,137.

SEWERS, WASTE DISPOSAL

BIDS ASKED

Calif., Los Angeles—(B.A. 9-12)—City, [illegible]

Tex., Harlingen—(B.A. 9-12)—City, [illegible]

Tex., Highlands—(B.A. 9-12)—City, [illegible]

PROJECTS COVERED

Projects—By Size

Construction projects now reported under the United States and Canada, are of these minimum sizes in largest water supply, earthwork, waterways, $25,000; other public works $100,000; industrial buildings $500,000; other buildings $250,000.

Classes of Construction

(Listed in order of Listing)

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Walls, Adys.
Tunnels & Subways
Land Drainage, Irrigation
Public Buildings
Commercial Buildings
Industrial Buildings
Residences

Stages Reported

For bill[illegible]

Symbols and Abbreviations Include:

▲
B.A.
ENR
CD

STREETS AND ROADS

BIDS ASKED

Tex., Dallas—B.A. 9.29—Inspr. and City Council of City of Dallas and State Hy. Comn., Austin, resurf. drainage 2.123 mi. Central Expressway from Pacific Ave. (ex-section St. Paul St. and from Elm St. to Pacific Ave. (ex-section St. Paul St.) Sub. R. E. Kilmer, 2915 Lee St., engr. CD 7-14-49.

LOW BIDDERS

Calif., San Francisco—8.22 Regents, University of California, Berkeley, service road on San Francisco campus, Mason Pavement Constr. Co., 1971 Tice St., San Francisco, $70,075.

†Colorado—Bureau of Public Roads, 254 New Customhouse, Denver, Aug. 26, 7.340 mi. Forest Hy. Proj. 52-B1, Eagle-Red Cliff, Gen. Const. Co. from Edwards Construction, Inc., 725 W. 59 Ave., Denver, $82,870; 6.975 mi. Forest Hy. Proj. 31-A3, Lower Tennessee Pass-Summit Co. from Eklund Construction Co., 2129 Scott-Federal Bldg., Denver, $99,165.

Colorado—State Hy. Dept., Denver, grading, surf., structures, 3.434 mi. State Hy. 172, Southeast of Durango near Forks and extend towards Ignacio, LaPlata Co., from Northeastern Engr. Co., 1600 Colorado Bldg., Denver, $209,067. Est. $209,508.

Ill., Rockford—City, City Hall, 30th Ave., Illinois streets, incl. storm sewers, curbs, gutters, sidewalks, etc., from Charles G. Ind. Point Ave., $60,736. Est. $60,110. CD 3-22-49.

Maine—State Hy. Comn., Augusta, Aug. 26, 3.11 gravel surf. (.42 mi. F. A. Proj. F-012-1) Hancock, from Bridge Constr. Corp., Augusta, $259,726; 1.1 gravel surf. (.48 mi. F. A. Secondary Proj. S-88-1) York and Tresselt, from Thomas Dickens, Lisbon, $187,710. CD 8-4.

Maryland—State Rds. Comn., Baltimore, Zone 2, Aug. 15, stabilized and b. cse. surf. previously graded and drained roadway, 3.590 mi. State Rte. 404 between Andersontown and Federalsburg, Contr., Eli & Abe Goodyear Co., 1701 Ridgewood Ave., Baltimore, $93,401. Grading, drainage, widen surf. and resurf. 5.15 mi. State Rte. 3 between Tanyard Hollow and Rock Point and grav. surf., bit. stabilization 0.44 mi. State Rte. 543 between State Rte. 3 and Cape Island Corner, CH 7603-2-529 and CH 270-2-529, Chandler Co., Inc., of Glen Burnie, $439,830. Grading, drainage, surf., bit. stabilized and base course, incidental bituminous aggregate surf. 2.992 mi. State Rte. 245 between Leonardtown and Hollywood, Constr. FM 281-7-215, St. Marys Co. from American Asphalt Co., 1st. First and P. Sts. S.E., Wash., D. C., $57,322. CD 8-17.

Maryland—State Rds. Comn., Baltimore, Zone 2, Aug. 8, grading, drainage, surf., 1.113 mi. Extension State Rte. 225 between Ripley and Indian Head, Charles Co. from F. F. Brown & Sons, Inc., of Hyattsville, $324,000. CD 7-27.

New Hampshire—State Hy. Dept., Concord, Aug. 27, grading, drainage, road mix surf. 2.277 mi. N.H. 16 in town of Tamworth, Proj. No. F 237 (1), from G. W. Wiggin & Son, Inc., Mill Yard, Amesbury, Mass., $171,667. CD 8-8.

O., Columbus—(c-s), Aug. 26, resurfacing 9.4 mi. from Circleville to Ashville, Pickaway & Ross Cos., Ter. No. 24-22.

▲ Pennsylvania—State Hy. Dept., Sec. 5, Box Rds., grading, drainage, surf., 1.5 mi. Sec. 5 Box Rds., connecting Route 22 and Route 30 at Irwin, Westmoreland Co., Aug. 31, Contract 27-10, and same 18 auth. on Sept. 7, Contract 27-11, and same 18 auth. on Sept. 14, Contract 27-12, and same 18 auth. on Sept. 21, Contract 27-13, and same 18 auth. on Sept. 28, Contract 27-14, and same 18 auth. on Oct. 5, Contract 27-15, and same 18 auth. on Oct. 12, Contract 27-16, and same 18 auth. on Oct. 19, Contract 27-17, and same 18 auth. on Oct. 26, Contract 27-18, and same 18 auth. on Nov. 2, Contract 27-19, and same 18 auth. on Nov. 9, Contract 27-20, and same 18 auth. on Nov. 16, Contract 27-21, and same 18 auth. on Nov. 23, Contract 27-22, and same 18 auth. on Nov. 30, Contract 27-23, and same 18 auth. on Dec. 7, Contract 27-24, from the McMillin Bond-Kiber Co., Washington, $2,212,157. Transport. Bldg., 1st. base with bit. surf., 24.05

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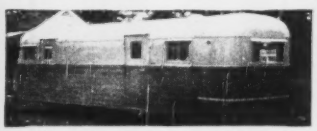

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$60,693, est. $75,000 respectively***flexible base, one course surf. tr. 7.53 mi. Hy. F. M. 1186, V. V. 731-2-1, Panola Co., from McW. in Burkett Constr. Co., P. O. Box 450, Tenaha. $116,985, est. $128,600***flexible base, asphalt surf. tr. 7.1 mi. Hy. FM 470, S. 549-2-2, Bandera Co., from Holland Pipe, P. O. Box 1161, Austin, Zone 6. $58,558, est. $74,000***flexible base, one course surf. tr. 4.45 mi. Hy. FM 479, S. 408-1-1, Frio Co., from Hall Burleson, Alpine. $67,615, est. $74,000***flexible base, 2 course surf. tr. 1.429 mi. Hy. FM 465, S. 1391-1-1, Bexar Co., from M. B. Kellam & Co., Inc. & Kellam-Keeton Corp., P. O. Box 4981, San Antonio. $99,230, est. $82,000.

Utah — Hgy. Comm., one course surf. tr. 8.465 mi. Hy. FM 879 and 879-1, 1.470 mi. Hy. 91, Cache Co., from John T. Lewis & Wasatch Inc., P. O. Box 1, Logan. $113,998, est. $116,000***flexible base, 2 course surf. tr. and bituminous overlay, 13.449 mi. Hy. St. 26 and 149, F. S. 11-A and F. S. 150, Cache, Davis, Morgan and Weber Cos., from Reynolds & Hull, Howard Bros. and Warner, S. Watkins, P. O. Box 68, Tyler. $499,452, est. $410,000***pavement widen. and bit. mix. resurf. on 9.116 mi. Hy. St. 75, P-460 (5), Montgomery Co., from Concrete Paving Co., P. O. Box 1, Bridgeport, Houston. Zone 11. est. $140,000***flexible base, asphaltic base, surf. and structures on 7.769 mi. Hy. St. 66 and 288, C. 1286-4-14, Brazoria Co., from Harrison Eng. & Constr. Corp., 4638 Mail Creek Parkway, Kansas City 2, Mo. $95,072, est. $78,000***grading, storm sewers, flexible base, bit. conc. pavement, curb & gutter on 1.634 mi. Hy. St. 32 (6), Harris Co., from Ewell Conrad & Chambers, Inc., P. O. Box 74, Houston. $1,144,255. CD 7-31.

Tex., Austin—City, City Hall, Aug. 8—8* blocks asph. paving, curb & gutter. Low bidder: from Eugene A. Root, Inc., Box 3, Houston. $398,980. Est., $260,000. CD 7/26.

Tex., Brownsville—City, City Hall, Aug. 10—asphalt type street paving, concrete curb and gutters, from Taylor Gage, Brownsville. $93,216. Est. $50,000. CD 7/31.

CONTRACTS AWARDED

Ia., Muscatine—Muscatine Co., c/o Ed. Suevers, County Engr.—7.35 mi. war-bd. rolled, cross sec., entrance type, instructions to R. B. Burch, Inc., Cedar Rapids. $56,159. Bids 4/6. CD 3/30.

Minnesota—State Hy. Dept., St. Paul—concrete pavement, surf. shoulders, 2.1 mi., Wayzata Blvd. from Turners Rd. to Penn Ave. south in Minneapolis, Hennepin Co., to Anderson & Sons, 100 N. 7 St., Minneapolis. $312,220***grading, gravel base, reads mixed bit. surf. 2.6 mi. between the south State Line and North Ave. in Walworth, Nobles Co., to Ashcraft & Sons Co., 3601 Alabama Ave., St. Louis Park. $55,043***grading, 2.1 mi. between T. H. 169 and T. H. 21 and 13.1 mi. New Prague and point 2.5 mi. south of T. H. 19 on T. H. 169, Le Sueur Co., to Bergheim Constr. Co., Clara City. $247,472***grav. base, road-mixed bit. surf., 4.3 mi. between the north limits of St. Paul and County Rd. B, Hoffmans Corner, Ramsey Co., to Ingber Contg. Co., 6430 Xerxes Ave. S., Minneapolis. Engr. Estimate, Trpp. Mater. $465,000***grav. base, plant-mixed bit. surf. & resurf. 6.2 mi. between Steele Center and Owatonna, Steele Co., and grav. base, and road-mixed bit. surf. 4.3 mi. between Herman and Jct. T. H. 54, Grant Co., to W. Hodgman & Son Co., Fairmont. $238,983 and $85,058 respectively***base repair, plant-mixed bit. surf. 12.3 mi. between Excelsior and west limits of Minneapolis, Hennepin Co., to Bituminous Roads, Inc., Hopkins. Base 9.1 mi. between south zone of Red Lake Indian Reservation and 12 mi. north of Jct. T. H. 2, Beltrami Co., to Meyers Bros., St. Cloud. $256,946 and $88,219 respectively***misc. base, grav. base, plant-mixed bit. surf. 4.6 mi. between Ironton and Deerwood, Crow Wing Co., to Meyers Bros. and Hallett Materials Co., Duluth. $233,335***grading, 10.7 mi. between 0.3 mi. south of T. H. 14 and 0.5 mi. south of Sibley Twp. Ct. to Moen Bros., Mankato. $117,452***re-mixed bit. surf. misc. structures on 11 mi. in Cts. of St. Paul on Maryland Ave. from Jackson St. to Mississippi St., Ramsey Co., to Oscar Gerdin, 1101 East National Bank Bldg., St. Paul. $243,767***grading, 10.2 mi. between Jct. T. H. 23 at Foley and Jct. T. H. 14 in Dodge Centre Cts., Olmsted Co. $62,039. Grand total $2,355,-420. Bids 8/4. CD 7/20.

▲ Pennsylvania—State Hy. Dept., Harrisburg—contract 2 bridges, 2 lanes, over Susquehanna R. in Sec. 3 Highway, in Union, Elizabeth, Jefferson and Forward Twps., incl. three I beam bridges and service roads and ramps with recon. conc. and bit. pavement, T. R. 51, and S.R. 837, Washington and Allegheny Counties, to Independent Contr., 1101 Western Ave., Pittsburgh, Zone 33. $2,679,-818. Bids 8/11. CD 8/16, under LB.

Tex., Wharton—Wharton Co., Wharton, all-weather road constr., Precinct 1, $90,000; Precinct 2, $85,-000; Precinct 3, $65,000; Precinct 4, $75,000; force account. Grand total $315,000. CD 11/8/49.

EARTHWORK, WATERWAYS

BIDS ASKED

+ New York—(B.A. 9/6)—Supt. of Canals, 60 Lafayette St., New York, Zone 13, Road contract at Big Chazy River at Village of Champlain.

B. C., Soimtula—(B.A. 9/6)—Acting Secy. Dept. P. Wks., Hunter Bldg., Victoria, B.C., breakwater, and piers, $62,000. R. Bids, C/O owner, engr.

+ Ohio—(B.A. 9/7)—U. S. Eng., Niagara and Bridge Sts., Buffalo 7, N. Y., enlargement Turning Basin, Lorain Harbor. Serial No. (LVO)-(Lor)-(023-52-1).

† Oregon B A 9 12 Bureau Reclamation Dist 10 terior Bend concrete lined canal laterals Madras Project Spec 1 Sept 12 Bids 10 a m Bureau Reclamation Deschutes Proj Spec R2-97 H T Nelson regional dir

† Texas B A 9 12 U S Eng 1127 T & P R R Bldg Fort Worth repairing pier Trinity River and tributaries CIVENG 81-445-4424 $75,000

† New Jersey B A 9 14 U S 1 & 9 50 Lafayette St New York Zone 13 N Y dredging approx 345 000 cu yd silt mixture in vicinity of Newark Bay Hackensack River to Arthur Kill CD 6 8 Engrs New York CIVENG 50 6775 $1 1 15 Midgeon Co

† Oregon B A 9 13 Bureau Reclamation Dist 10 terior Bend lining Arnold Irrigation District South Twin Lake Tumalo Project Spec R2-98

† Oregon B A 9 14 Bureau Reclamation Dist 10 terior Bend concrete lining Arnold Irrigation District South Twin Lake Tumalo Project Spec R2-98

† Washington B A 9 14 Bureau Reclamation Dist 10 terior Spring 1 A Denver Federal Center Denver Colo Notice No 6 B Contractors desiring prequalification for bids on Boysen Dam and Reservoir Wind River Project Wyo should submit data excluding transmittals and countersigned portions of contracts and subcontracts Bureau Reclamation Spec 2358 N Mickelsen Chief Div Design

† Florida B A 9 15 U S Eng P O Box 4970 Jacksonville concrete apron taxiway Cecil Field Levee L-40 west of present Runway 9-27 Centex and Lundy Inc Contractors Post Inv No 51 Engrs Jacksonville CIVENG 58 2151 CD 6 21

† Colorado B A 9 14 Bureau Reclamation Grand Junction 34 miles 27 ft wide 9 5 in thick Grand Valley Project Spec 2374 bids 10 a m Mountain Standard Time Sept 26 Bureau Reclamation Box 2511 Denver CD 6 21

† Virginia B A 9 15 U S Eng Post Office Bldg Norfolk 4 reinforced concrete piers 2 steel fender piers 1 timber fender pier 1 timber dolphin 1 steel dolphin 1 timber trestle 1 steel trestle 1 timber and steel trestle 1 timber and steel bridge Norfolk CIVENG 44 1 0 11 CD 6 21

LOW BIDDERS

† Arkansas U S Eng 205 W Capitol Little Rock Ark 1 mi of type and 3 mi of type pavement Lewis Ark to Pine Bluff near Lewisville Lewis Ark Contractor Inc Contractor Inc Contractor Inc

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Fla., Ocala (Marion Co.)—CHURCH, etc.—B.A. About 9-15. First Methodist Church, c. o. Dean Parmelee, archt., 605 Lincoln Rd., Miami Beach; church and educational bldg., $300,000. CD 8-3.

▲ Tex., Fort Worth—SCIENCE—B.A. 9-15—Office of Wyatt C. Hedrick, Sr., archt., 1005 First National Bank Bldg.; 3 story, brick, steel science bldg., University Dr., for Texas Christian University Campus, Fort Worth. $1,200,000. Plans deposit $50. CD 5-17.

Ill., Chicago—APARTMENT—Bids Asked—Owner, c/o Loewenberg & Loewenberg, archts., 111 W. Monroe St., Chicago; 3 story, brick apartment, 7750 S. Shore Ave., $600,000. CD 7-28-49.

Ill., Chicago—APARTMENT—Bids Asked—Alfred B. Perlmutter & Max Metz & Dale, archts., 208 S. La Salle St., Chicago; 4 221-unit apartment, Walton and Lakeside Sts., $800,000. CD 9-12.

Ill., Naperville—Y. M. C. A. BLDG.—Bids Asked—Y. M. C. A., 34 S. Washington St.; 3 story, steel, brick, concrete Y. M. C. A. Bldg., addn., $250,000. Philip D. West, 33 E. First St., Hinsdale, archt. CD 1-31.

LOW BIDDERS

▲ Tex., Fort Worth—DWELLINGS—Shelby Davies & Assoc., 3201 B Ave., opened bids to have been received 2/24; dwellings, $1,250,000. Revising plans.

CONTRACTS AWARDED

▲ Mass., Boston—LIBRARY—Northeastern University and Huntington Ave., 3 story, 90'x200' ft., brick, stone library addition; Aberthaw Construction Co., 161 Devonshire St., Boston, Mass., engr. for Mayer Construction Co., 161 James Ave., $1,500,000. Bids 4-4. CD 8-1.

▲ Pa., Bristol—RESIDENCES—Redevelopment Authority, Bristol Township, Lower Bucks Co., project 1, Redevelopment, Rogers Rd., separate contracts, $1,456,000.

▲ Pa., Phila.—RESIDENCES—Edward Pugh, 319 S. 15th St., for redevelopment project 5 Ave., 20 private contracts, $1,110,000. Lease 2 Queen Lane, 15th Ave. St., night.

▲ Tex., Dallas—HOTEL—Jacques Hotel, 3321 Commerce St., 24 story reinforced hotel, addn. to Henry S. Jacobs, 1208 Main Ave., $3 Approx. $5,000,000. Bids 4-15. CD 7-26.

▲ Tex., Houston—HOTEL—Lamar Hotel, Main and Walker Sts., 32 story, annex, office, 11 W. S. Sterling, archt., c/o The M. Everton Co., Approx. $1,400,000. Kenneth Franzheim (also Shirley) St., archt.

INDUSTRIAL BUILDINGS

BIDS ASKED

O., Miamisburg—PLANT—B.A. 9-19—Mound Lab., Monsanto Chemical Co., Miamisburg; research and development plant, steel, brick, L-shaped bldg., for material research and development, Area 20, Mound Laboratory, Miamisburg; 2 story, 512'x418 ft. and 1 story, 2 story, 156'x418 ft. M. W. Dickson, engr.

Ga., Brunswick—PLANT, etc.—B.A. 9-11—Brunswick Pulp & Paper Co., Brunswick; plant addn., water-front, $1,500,000. CD 12-29-49.

Ill., Peoria—AARON—B.A. 9-11—[illegible]

† Wash., American Lake—[illegible]

† Colorado—[illegible]

† South Dakota—[illegible]

▲ Ky., Owensboro—[illegible]

Del., Wilmington—[illegible]

Del., Wilmington—[illegible]

Ill., Maywood—[illegible]

Ill., St. Charles—[illegible]

CD 11-25-49.

La., Mansfield—[illegible]

N. J., Camden—SALES and SERVICE—Bids Asked—Raley & MacVeety, archts. and engrs., 8 and Market Sts., Camden; sales and service for Admiral Wilson Realty Co., c/o Bonner Chevrolet Co., Bridgeville. Approx. $300,000.

Pa., Phila.—SALES and SERVICE—Bids Asked—Benedict D. Kahlon, 2534-77 Ave., auto sales and service, Approx. $68,000. Extended date; Frank Wise, 2025 Walnut St., archt. CD 7-28.

Pa., York—PLANT—Bids Asked—John B. Hamme, archt., 125 E. Philadelphia St., plant addn. for Blue Bird Silk Mfg. Co., 600 N. Hartley St., $225,000. Jacob Fine, 25 Commerce East, Jersey City, N. J., engr.

Ont., Sutton—WAREHOUSE—Bids Asked—Brewers Warehouse Co. Ltd., 19 W. Richmond St., Toronto, 2 story, 50'x120 ft., 27'x37 ft., concrete brick warehouse.

UNCLASSIFIED

BIDS ASKED

Iowa—RURAL DISTRIBUTION LINES—B.A. 9/6—Corn Belt Power Cooperative, Humboldt, 28 mi. 69 kv. rural distr. lines and erection at 69-12.5 kv. step down sub station, Clay and Dickinson counties. Approx. $75,000. Stanley Eng. Co., Hershey Bldg., Muscatine, engr.

Nebraska—RURAL DISTRIBUTION LINES—B.A. 9/6—North Central Nebraska Rural Public Power Distr., Creighton, 44 mi. rural distr. lines, Antelope and Knox counties, $55,000. Raymond H. Reed & Co., Columbus, engrs.

Que., Ile Aux Grues—WHARF—B.A. 9/6—Acting Secy., Dept. Public Works, Hunter Bldg., Ottawa, Ont., wharf, extension. Approx. $50,000. Plans deposit $20. R. Blais, c/o owner, engr.

Fla., Jacksonville—SWITCHBOARD, etc.—B.A. 9/7—City, City Hall, installing switchboard and switchgear, appurtenances at Hendricks Ave. Substation. Plans deposit $3. Reynolds, Smith & Hills, 227 Park Ave. So., Jacksonville. Zone 4, engrs.

† Nebraska-Wyoming—TRANSFORMERS—B.A. 9/7—Bureau of Reclamation, Dist. Interior, Casper, Wyo., Interior Transformer Div., Missouri River Basin Proj., Neb. and Kendrick Proj., Wyo. Specs. VII-240; adv. ENR 8/31.

Wis., Milwaukee—STRUCTURAL STEEL—B.A. 9/7—Milwaukee Co. Park Comm., Court House, 2,500 tons structural steel for Milwaukee Co. Stadium. Plans deposit $5—rev. ENR 8/24. CD 2-28.

Que., Ste. Anne de Sorel—SHEET PILING—B.A. 9/7—Acting Secy., Dept. Public Works, Hunter Bldg., Ottawa, Ont., steel sheet piling protection. Approx. $50,000. Plans deposit $25. R. Blais, c/o owner, engr.

Ont., Brantford—CAN.—B.A. 9/7—Grand River Conservation Authority, Secy.-Treas., Box 729, Brantford, Ont., Fairchild Creek and Upper Valley, $31,000. Plans, deposit $20. H. G. Acres & Co., 21 Queen St., Niagara Falls, engrs. CD 9-15.

California—TRAFFIC SIGNAL SYSTEMS, ETC.—B.A. 9/8—State Div. Hy., 120 S. Spring St., Los Angeles, Calif., traffic control and hy. lighting at intersections of Foothill Hwy. 7A, Wilshire Way, Del Camino Ave., Mariposa Ave., etc. G. T. McCoy, engr.

Fla., Jacksonville—STORAGE—B.A. 9/14—St. office, petroleum engr., P. O. Box No. 5, N. A. S., Jacksonville. Storage Bldg. 21, and bldg. extens. to Storage Bldg. 20, Naval Air Station, Plans deposit $10.

Ala., Mobile—LIGHTING TOWER—B.A. 9/19—Alabama State Docks & Terminal, c/o J. B. Cochran, engr., P. O. Box 1004, receiving bids for Lighting Tower. Plans, etc.

† North Dakota—[illegible]

La., Camp Polk—SIDING, etc.—B.A. 9/25-10/5, Engr. Office, Camp Polk, Louisiana. Tex. requirements (including Fe bldg.) for Fe and Tex. replacement (including Fe bldg.) for Fe and Tex. replacement (including Fe bldg.) for Fe and Tex. replacement

PROPOSED PROJECTS

WATER SUPPLY

Ill., Decatur—City, City Hall, extend 3 water mains, etc., $100,000. John Weir, Decatur city engr. CD 1-13-47.

Ill., Peru—City, impvg. water treatment plant, incl. 500,000 gal. tank, piping, clear-water, lime slaker, filter, etc., $500,000.

Mich., Three Rivers—City, Comp., sewage disposal plant, water-treatment facilities, $600,000.

Neb., Omaha—Metro. Public Power Dist., 17 and Harney sts., water and steam supply for new power plant to be built. Approx. $500,000. C. W. Wheeler, 1st Nat. Bank Bldg., Omaha, consult. engr.

N. J., Westmont—Haddon Twp. Elec. Department, water plant, 2 well, booster station, $200,000. John H. Fuller, Haddon Ave., Collingswood, consult. engr.

▲ O., Dayton—(Suburb), Montgomery Co., Courthouse, water supply, sewerage sys. for Northridge and Sunlite Country Dists., near here, $4,000,000. Earl Kiser, Court House, County Engineer.

O., Kent—City, Frank J. Dangler, mayor, impvg. WW, rock, water-bearing strata, 1,250 to 1,350 gpm water well, $145,000. Alsdorf & Emerson, Leader Bldg., Cleveland, consult. engrs.

Tex., Carthage—City, seek supply, well, 500,000 gal. concrete storage reservoir, pump station, incl. distr. system, $169,000. Alvord, Burdick, Fix & Assoc., 1415 N. Dixie Dr., Tyler, consult. engrs.

Tex., Los Fresnos—City, voted bonds, Aug. 12, WW sys. impvs., $50,000; repairing WW, $25,000. W. B. Sweet, city owner engr.

Tex., San Augustine—City, voted bonds, Aug. 19, WW, $100,000. J. M. Loyd, 620 S. Sneed St., Tyler, consult. engr.

SEWERS, WASTE DISPOSAL

▲ Ark., Blytheville—City, sewerage sys., $1,267,000. A. E. Heagley, Exchange Bldg., Little Rock, consult. engr.

Calif., Los Angeles—Bd. Supervs., Los Angeles Co., 501 Hall of Records, County Engr. to Hist. Dr. C. L. Hauck, Gurley, $144,000. C. K. Arnold, co. engr.

Ill., St. Charles—City, City Hall, sewage works, auxiliary, etc., $150,000. Continental Industrial Engineers, Co., 176 W. Adams St., Chicago, Zone 3, consult. engrs.

Ill., Waukegan—City, impvg. sewerage sys., $500,000. CD 4-11-46.

Ore., Albany—City, City Hall, bond election, sewage treatment facilities, $500,000. Howard, Needles, Tammen & Bergendoff, 1600 Baltimore Ave., Corvallis, engrs.; Ewing Hemion, City Hall, City engr. CD 5-13-46.

Tex., Carthage—City, sewage disposal plant, addl. sanitary sewer lines, $275,000. Wisenbaker, Fix & Assoc., 1415 N. Dixie Dr., Tyler, consult. engrs. CD 3-24-47.

Tex., San Augustine—City, water bonds, Aug. 19, sanitary sewers, $125,000. J. M. Loyd, 620 S. Sneed St., Tyler, consult. engr.

Que., Montreal—Municipality, sewers on Redford Rd., and Dunstan Ave., $126,000. H. A. Gideon, City Hall, city engr.

BRIDGES

Ind., Anderson—City, bridge over White River, $200,000.

▲ Rhode Island—State Hy. Dist., Providence-Newport Co.—2,700 ft. suspension span bridge, 4 lanes flanked by 11 ft. safety walk, 220 ft. above water, mounted on two towers, $32,310,000. Pyburn, Knapp, Newport, Jamestown, $12,310,000. Pyburn, Knapp, Newport & Middletown Bridgeway, Broadway, New York, N. Y., engrs.

Que., Montreal—Municipality, subway under Dunstan Park, R.R. tracks at Chemin de Cotnoir St., $600,000. CD 11-27-46.

STREETS AND ROADS

Fla., North Miami Beach—City, street improvs., Proj. 1950-2, $603,620. Reynolds, Smith & Hills, 527 Palm St., Jacksonville, consult. engrs.

Ill., Champaign—City, [illegible], $625,000-$748,000. John Kaufmann, [illegible], city engr.

▲ Ill., Ottawa—[illegible], impvs. 8 mi. roads, Sheridan Rd., $166,400. [illegible] 3 mi. road reconstruction between [illegible], $114,400; [illegible] 2 mi. road between [illegible], $187,200; impvs. 3 mi. roads between [illegible] and Wedron Center, $124,800; impvs. 2 mi. road near [illegible], $62,000. Impvs. 1.6 mi. road from Cedar Point north, $73,500. Impvs. 11 mi. road between [illegible] and [illegible], $309,920. Impvs. [illegible] Bridge, $309,920. Impvs. [illegible] and [illegible] Creek, $164,320. Impvs. 3 mi. road between [illegible], $166,816. Impvs. [illegible] bridge over Fox River, $145,600. Impvs. 2 mi. road between [illegible] Rd., $145,600. Impvs. [illegible] Rd., $31,200. Impvs. [illegible] Rd., $83,200. Impvs. [illegible] Rd., $78,000. Impvs. 3 mi. road between [illegible] and [illegible], $226,700. Impvs. 4 mi. road between [illegible] and Mt. Palatine, $104,800. Impvs. 2 mi. road between Lowell and Lacoste, $85,800. Impvs. 2 mi. road between Grand Ridge and Marseilles, $145,600. Impvs. 2 mi. road between [illegible], $145,600. Impvs. 3 mi. road between [illegible] Rd., $83,200. Impvs. [illegible] Rd., $149,344.

Ill., Roanoke—City, resurf. 10 blocks streets, $207,200. A. Lund, city engr. Jefferson Ave., Peoria, consult. engr.

▲ La., Baton Rouge—Pavers Incorporated, contr., for City Parish Council, East Baton Rouge, water, sewer improvs., Government St. from East Blvd. to Westminster Rd., La. 16 & 19 (2), $1,035,935; extend water, sewer Perkins Rd. from end of Park Blvd. to Burbank Dr., La. 19 & 1023, $1,026,886. Guy Rollins, Baton Rouge, dir. P. Wks.

O., Toledo—City, paving Oak and Front Sts. from Main to Fassett sts., and paving Jackson St. from St. Clair to Michigan sts., $100,000. M. J. Curtis, city street div. engr.

Okla., Altus—City, access highways, $500,000. W. B. Hendrick, Lawton, consult. engr.

Okla., Okmulgee—City, defeated bonds, access highway, $155,000. CD 7-27-50.

AIRPORTS

▲† Fla., Jacksonville—MASTER JET FIGHTER BASE—U. S. Navy, Dist. Yards & Docks, Navy, Arlington, Va., converting Cecil Field to master jet fighter base, incl. heavy construction, 15 mi. west of here, $5,750,000.

N. Y., Idlewild—PERMANENT CONTROL TOWER—The Port of New York Auth., 111 8 Ave., New York, Zone 11, 10 story steel permanent control tower to replace present inadequate temporary tower at New York International Airport, $735,000. CD 4-27-44.

PUBLIC BUILDINGS

▲ Conn., Cheshire—SCHOOL—Town, School Dist., Technical High School, $1,200,000. CD 5/6/46.

▲ Ill., Benton—HOSPITAL—Franklin Co., Benton, voted bond Aug. 5, hospital, $2,000,000. CD 8-3-50.

▲ Ill., Canton—SCHOOL—Canton Union School Dist., Canton, bond election brot. to high school, $1,250,000.

Ill., Carmi—MUNICIPAL BUILDING—City, municipal bldg. incl. generator, power sys., $275,000.

▲ Ill., Lockport—SCHOOL—Lockport Twp. School Dist., Lockport, plans by A. E. Doyle, 215 Herkimer St., Lockport, for Mound, Lockport Twp. High school, $1,000,000.

▲ Md., Baltimore—HOUSING—Housing Auth., 209 E. Lexington St., plans by E. L. W. Mantle & Fenton & Lamb, 1010 B. Charles St. & Story, Fort Hunt, Va., for Westport housing, containing 2-story row houses, $2,125,000. Sanitary, Amman & Assoc., 1021 N. Howard St., struct. engrs. Geary, Hoge & Hoff, 1107 N. Howard St., struct. engrs. Martin, Eisenbrandt & Gilbert, 1111 Park Ave., mech.-elec. engrs.

▲ Mass., East Boston—TERMINAL—Port of Boston Commission, Piers, South Boston, to relocate terminal, $7,500,000. Fay, Spofford & Thorndike, 11 Beacon St., Boston, consult. engrs.

▲ N. J., Hamilton Twp.—SCHOOL—Hamilton Twp. Board of Education, Hamilton Twp., Mercer Co., plans by Hamilton Twp. Engr., for Yardville, Groveville, Ave. and Klockner Rd., $1,250,000; school in same area, $400,000. Art Pfeiffer, city of Everett, Wash., for Everett Community Theatre, $400,000. Columbia University, Teachers College, Morningside Heights, New York, N. Y., consult. engr.

▲ O., Boardman—[illegible], Boardman Twp. Board of Education, Boardman Twp., Mahoning Co., $1,000,000.

▲ Okla., Norman—[illegible], University of Oklahoma, voted bonds, men's dormitory, $2,380,000.

▲ Pa., Harrisburg—[illegible], Commonwealth of Pennsylvania, Dept. of Property & Supplies, Capitol Bldg., for Agriculture, Labor & Industry Bldg., $3,800,000. Dept. of Property & Supplies, Capitol Bldg., for Welfare Bldg., $600,000.

▲ S. C., Columbia—[illegible], State Hy. Dist. Columbia, plans by Hopkins, Rogers & Lumpkin, Columbia, for Department Store bldg., $1,500,000.

▲ Va., Radford—CAMP—Navy, U.S. Marine Corps, Quantico, Va., addn. camp at Easton Court, near here, $1,000,000.

Tex., San Antonio—CENTER—Bennett E. Hooker & Assoc., 427 E. Lee Ave., to construct 3 centers, in Hooker Haven area, $500,000.

▲ Tex., San Antonio—[illegible], Independent High School Dist., Alamo Heights, Proposed High School, Austin Highway & Broadway, Alamo Heights, Sewell Ave. & Lockhill Selma Rd., for Phase A, Design & Site, $300,000; [illegible], $275,000; Unit 2, $250,000; Unit 4, $250,000.

COMMERCIAL BUILDINGS

▲ Calif., Los Angeles—BANK, etc.—Bank of America, Main & Spring sts., plans by Rapsford, Stone & Stone, 3 story & basement office building, Broadway & Vermont Ave., $5,030,000. Wm. D. Lutty, 649 S. Olive St., engr.

▲ Calif., San Diego—STORE, Sears, Roebuck & Co., Fenton & Hill, Los Angeles, plans for 3 stories & basement store, 100,000 sq. ft. store. Approx. $1,000,000. CD 7-27-50.

▲ Calif., San Francisco—HOSPITAL—[illegible], Market & Duboce sts., $1,400,000.

▲ Conn., Hartford—[illegible], Hunter Station Co., Inc., 1 Ave. and 43 St., New York, N. Y., plans by [illegible], Trenton, for 3 stores, to store, market & [illegible], $5,000,000.

▲ Conn., Manchester—HOUSING—Alexander Hirsch, 3 Union St., Hartford, private redevelopment housing development, $1,080,000.

Conn., New Britain—SHOPPING CENTER—A. Dupont Corp., c/o 1401 Thomaston Ave., Waterbury, shopping center, interior business area, $500,000.

▲ Fla., Miami—MOTEL—Harold N. Mack, c/o Alfred B. Parker, engr., 2442 S. W. 27 St., 128 rooms, $1,000,000.

▲ Ill., LaGrange—HOSPITAL—Community Memorial Hospital, LaGrange, plans by Schmidt, Garden & Erickson, 1 Madison St., Chicago, Zone 2, hospital, $1,000,000.

▲ Ill., Skokie—SHOPPING CENTER—Marshall Field & Co., 111 N. State St., Chicago, plans by James A. Ware, Sears, Roebuck, Chester Dept. store, Niles Center Rd. & Lincoln Ave., $12,000,000. CD 6-11-50.

▲ Ill., Waukegan—APARTMENT, Harrison Realty Co., Vickerman Bldg., 1 unit apartment, $1,000,000.

▲ Kan., Wichita—PLUMBING—Wichita Realty, Inc., Beacon Bldg., plumbing, $1,000,000.

▲ Mo., Richmond Heights (St. Louis 17, P.O.)—SHOPPING CENTER—Lee Forest Development Corp., c/o Morris H. Mandel, 12 Washington Terrace, St. Louis, Zone 12, and Milton West, 220 Broadway, New York, N. Y., plans by Harris & Brown, 1060 Broadway, New York, N. Y., to construct [illegible] sq. ft. shopping center, on front of Clayton Rd. in 7900 block. Approx. $7,500,000.

INDUSTRIAL BUILDINGS

▲ Ind., Indianapolis—PLANT—Chrysler Corp., 341 Massachusetts Ave., Detroit, 31 story plant, to Albert Kahn Assoc. Architects & Engineers, Inc., 625 New Center Bldg., Detroit, Mich., 3 story, 650 ft. by 80 ft. truck assembly & transmission building, plant on 50 acre site, $7,000,000.

▲ Ky., Louisville—HEATING UNIT—Louisville Gas & Electric Co., 311 W. Chestnut St., to construct steam electric generating unit at Paddy Run Station on Ohio River, $9,000,000.

▲ Mich., Ferndale—FACTORY—Ferndale Tool & Machine Co., 1 story chemical factory, $1,000,000.

▲ Neb., Omaha—FOOD—Quaker Oats Co., 345 W. Laurel St., Chicago, chemical plant, $1,000,000.

▲ S. C., Spartanburg—PLANT—[illegible], Spartanburg, $3,000,000.

▲ Newfoundland, Corner Brook—MILL—Bay Ltd., [illegible], $3,000,000.

▲ Tex., Baytown—REFINERY—Humble Oil & Refining Co., [illegible], $1,000,000.

▲ Tex., Houston—GARAGE—Brown-Nelson Smith, Inc., 6 A. [illegible] Fla. to Houston St., plans by Kennett, Frazier & Finn, Cleveland, O., 200 car steel frame garage, [illegible] by Gordon Brown Assoc., Houston, $1,000,000.

UNCLASSIFIED

▲ Tex., Waco—FAIR GROUND BLDGS.—McLennan Co. Fair Assoc., plans by Charles H. Dilbeck, 1111 Mercantile Bldg., Dallas, for [illegible], $475,000.

▲ Wash., Seattle—[illegible], Seattle, $300,000.

▲ Wash., Seattle—[illegible], $425,000.

▲ N. B., Saint John—WATER DEVELOPMENT—New Brunswick Electric Power Commission, Fredericton, [illegible], $1,500,000.

▲ Ont., Brantford—STORAGE DAM—E. E. Roberts, Secy., Grand River Conservation Comm., proposed storage dam on Luther Marsh, [illegible], $5,600,000.

Ont., Brantford—STORAGE DAM—E. E. Roberts, Secy., Grand River Conservation Comm., proposed storage dam on Conestogo River, [illegible], $215,000.

▲ Que., Perimeter—HYDRO ELECTRIC DEVELOPMENT—Aluminum Co. of Canada, Arvida, proposed development on Perimeter River, $31,000,000.

CONSTRUCTION REPORTS-Second Section

WATER SUPPLY

BIDS ASKED

Fla., Sarasota—B.A. 9/5—City, Sarasota. Drilling, casing 4 water supply wells. Approx. $24,000. Plans deposit $1.00. Smith & Gillespie, Roberts Bldg., Jacksonville, Zone 1, engrs. CD 12/7.

N. S., Trenton—B.A. 9/5—Nova Scotia Power Comn., Halifax. 4,100 ft. long 6 in. fresh water supply line. Plans deposit $25. H. Fenton, c/o owner, engr.

Ga., Winder—B.A. 9/7—City, WW mgrs. J. B. Mashburn, 22 Marietta St. Bldg., Atlanta, engrs. Extended date.

Tex., Cibolo—B.A. 9/8—Guadalupe County Water Control & Improv. Dist. 1, Cibolo, water supply well, $50,000. Frank E. Drought, 117 W. Pecan St., San Antonio, engr.

Tex., College Station—B.A. 9/14—Agricultural & Mechanical College of Texas, College Station, 2 pump stations and reservoir. Approx. $150,000. Plans deposit $25. Homer A. Hunter, 4704 Greenville Ave., Dallas, engr. CD 8/25.

LOW BIDDERS

Ala., Rainbow City—Town, WW system, from Weaver Contr. Co., Gadsden, $120,575.

Calif., Oakland—East Bay Municipal Utility Dist. 512 16 St., Oakland. Aug. 11. 1 MG capacity prestressed reinforced concrete Bayview Reservoir, from Elmer J. Freethy, 1432 Kearney St., El Cerrito, $89,550. CD 8/2.

Conn., Middlefield—City, Samuel H. Cotton, supt. of Water Dept., City Hall, pumping station and pipe lines, Laurel Brook Reservoir, from Water Gas Constr. Co., 525 Main St., Hartford, $72,869.

Mass., Worcester—City, c/o Water Bd., City Hall, August 15. 11,000 ft. 6 to 8 in. water mains, from Carl Lemon, 158 Bryn Mawr Ave., Auburn, $67,641.

Tex., Daingerfield—City, Daingerfield, cancelled bids to have been opened Aug. 31, water lines, $30,000. W. Lee Whitehead, CD 8/30.

Tex., Dallas—City, City Hall, Aug. 15, elevated steel water tower, 1 mile from Cockrell Bridge & Iron Co., 5215 Clinton Dr., $285,800. CD 8/1.

Va., Pulaski—Town, Pulaski, Aug. 17, WW improvements, [illegible], $342,310. CD 7/28.

CONTRACTS AWARDED

Ala., Bay Minette—City, WW improvements, to M. G. Aldridge, Macon, $154,478. CD 7/21.

La., Hahnville—St. Charles Parish Waterworks Distr. 2, Courthouse Bldg., WW sys., Dist. A, iron and manganese water treatment plant, 1,000,000 gal. capacity, 2 elevated steel tanks, 200,000 gal. capacity, New Orleans, $263,045; Dist. B, water sys. improvements, 2 elevated steel tanks, 200,000 gal. capacity, 10 in. pipe, to Luling, Hahnville & Destrehan, 2 in. pipe, to Lucien Heights & Des Allemands, 4 in. pipe, to Norco, New Orleans, $79,159; Dist. C, transmission mains, 16 in. elevated steel tank, 500,000 gal. capacity, 12 in. pipe, to Jefferson Highway & other areas, New Orleans, New Orleans, $35,256. Bids 8/15. Grand total $377,460. CD 6/1.

Mich., Kawkawlin—Kawkawlin Metropolitan Dist., Kawkawlin, water sys. improvements, to Robert Kinsman Inc., Detroit, $112,000. CD 6/21.

Mo., Forsyth—City, water sys. improvements, to Bridge, 1124 E. Commercial St., Springfield, $40,000.

Tex., Cooper—City, water sys. improvements, to [illegible], $30,000. W. Lee Whitehead, CD 8/30.

Tex., Crandall—City, city hall, water lines, to [illegible], $40,000. Joe J. Rady, 813 Burnett-Tandy Bldg., Fort Worth, engr.

Tex., Fort Worth—City, City Hall, C. Lowe lines, extensions & improvements, to [illegible], $90,000. Freese & Nichols, 1114 Commerce St., Dallas, engrs.

Tex., Houston—Harris County Municipal Utility Dist. 1, Houston, water & sewer lines, to Layne-Texas Co., Houston, $37,250.

SEWERS, WASTE DISPOSAL

BIDS ASKED

▲ Mich., Port Huron—B.A. 9/5—City, city sewage disposal, three settling tanks, 2 digesters, sludge drying beds, sludge pumping station, 2 sludge storage tanks, 2 sludge pumps, 2 sludge boilers, 2 sludge compressors, 2 sludge gas holders, 2 sludge gas flares, 2 sludge gas engines, 2 sludge gas generators, 2 sludge gas motors, 2 sludge gas

to junction with U.S. 260, Proj. 4 S 207 (2), Barber Co., from Peter Kiewit Sons' Co., Airport P. O., Wichita, $56,429. CD 7-28.

Md., Baltimore—City, Bureau Hys., 303 Municipal Bldg., Zone 2, August 16. Contr. 1086, cement conc. street paving, from Paramount Constr. Co., Inc., 7614 Holabird Ave., $124,972. Contr. 1087, cement conc. street paving, from City Bldg. & Constr. Co., 4420 E. Eager St., $82,308.

Michigan—State Hy. Comm., Lansing, August 10, single seal surf. treatment on M-153 Kentwood-Wyoming and double seal on M-38 C3, ME-SI-14 C5, ME-33-16 C3, ME-33-45 C5, ME-33-16 C4, ME-S-223 C5, and ME-47-6 Ingham, Washtenaw and Livingston Counties, from Lewis & Fryfogle Co., Ann Arbor, $53,403. Single seal surf. treatment on M-37 County line to Holly, single seal surf. treatment on M-57 to U.S. 10, single seal surf. treatment on M-155 Kentwood-Wyoming and double seal on M-218, from U.S. 16 to Orchard Lake, Oakland Co., from W. H. Hazen, Inc., Utter Zone, Birmingham, $73,600.

Michigan—State Hy. Dept., Lansing, August 10, 22.6 mi. double seal surf. treatment on M-36 County line east to U.S. 23, ME-47-24 C5, Livingston Co., from Wright Contracting Co., Williamston, $69,706.

▲ New York—State Dept. of Public Works, Albany, Aug. 23, concrete traffic divider on I-65 and I-5 from Rte. 5 to Rte. 20 in Schenectady, planting on I-87 between Mile 4.94 and Northern State Parkway extension, eastward from New York City line to Glen Cove Rd., Nassau Co., from Mt. Vernon Contr. Co., 459 N. Terrace Ave., Mt. Vernon, $696,325; and $765,000 available; traffic lighting on Rte. 5 from Rte. 165 to Rte. 63 from intersection at Rte. 5 and Rte. 63 in Orchard Park, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $67,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 63 to Rte. 20 in Orchard Park, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 20 to Rte. 179 in Orchard Park, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 179 to Rte. 62 in Hamburg, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 62 to Rte. 219 in Orchard Park, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 219 to Rte. 240 in Orchard Park, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 240 to Rte. 78 in Cheektowaga, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 78 to Rte. 354 in Cheektowaga, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 354 to Rte. 179 in Cheektowaga, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 179 to Rte. 33 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 33 to Rte. 198 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 198 to Rte. 266 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 266 to Rte. 324 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 324 to Rte. 354 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 354 to Rte. 179 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 179 to Rte. 62 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 62 to Rte. 219 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 219 to Rte. 240 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 240 to Rte. 78 in Buffalo, Erie Co., from Kenneth Grant, Inc., 1 Grant Ave., Depew, $75,395; and $75,000 available; traffic lighting on Rte. 5 from Rte. 78

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Wis., West Allis—City, paving various streets to Stack Concrete Co., 3309 W. Oklahoma Ave., Milwaukee. Zone 15, $143,806. Bids 8-8. CD 7-12-45.

▲ Alberta—Province of Alberta, Parliament Bldgs., Edmonton, grade 10 mi. Trans-Canada Hy., to Asphalt Engr. Co., Ltd., Calgary, $121,262; grading, and surf. 42 mi. Trans-Canada Hy., to Standard Gravel & Surfacing Co. of Canada Ltd., Calgary, $2,654,035. CD 12-8-49.

EARTHWORK, WATERWAYS

LOW BIDDERS

Ark., Lake Village—Arkansas Game & Fish Comm., Little Rock, city to constr. earthen dam on Lake Chicot, from Linwood Smith Lake Village, $96,250. CD 7-26.

† Indiana—U. S. Eng., 830 W. Broadway, Louisville, Ky., repairing, raising Niblack Levee, on Wabash River, near Vincennes, Knox Co., from Greer Constr. Co., Clarksville, $119,671. CD 8/4.

La., Metairie—Jefferson Parish, 4th Jefferson Drainage Dist., 649 Helois St., August 11, rehabilitation Monson Ditch in 7th and 8th Wards, from Bob Bros., 2400 Cypress St., New Orleans, $39,824. CD 7-18.

▲ Miss., Gulfport—City, August 17, marginal wharf, warehouse, apron and 1,420,000 sq. yd. dredging, dwarf, from W. Horace Williams Co., 830 Howard Ave., New Orleans, La., $409,261; warehouse addn. from J. C. McClendon Jr., Gulfport, $108,477; dredging from Benton & Co., P. O. Box 1347, St. Petersburg, Fla., $211,000. CD 7-28.

CONTRACTS AWARDED

▲ †Louisiana—U. S. Eng., Port of Pretania St., New Orleans, constr. superstructure of gated portion of Morganza Control structure in New Orleans Dist., Point Coupee Parish, CIVENG 16-047-50-284, to Farnsworth & Chambers Co., Box 74, Houston, Tex., $5,269,069. Awarded 8-15. CD 8-2.

Tex., Dallas—C. J. Leon, 2011½ Jackson St., Dallas and James McQuiad, Tyler, grading, open drainage, own forces, $42,000.

AIRPORTS

BIDS ASKED

Mich., Lansing—AIRPORT—B.A. 9-7, State, Lester J. Maitland, dir., State Dept. Aeronautics, Capitol City Airport, installing flight sys., 20,000 lin. ft. underground cable, intensity runway lights, 60 beam runway lights, electric transformer vault, airport work etc. Plans deposit $5, no refund. CD 9-12-47.

† Alaska, Kodiak—TAXIWAY, RUNWAY—B.A. 9-12—Pub. Wks. Officer, Bldg. 5-12, Naval Operating Base, Kodiak, taxiway and extens. of runway at Naval Air Station for Bureau Yards and Docks, Navy Dept., Arlington, Va. CD 8-15-49.

Ala., Huntsville—RUNWAY LIGHTING, etc.—B.A. 9-14—City, city hall, runway lighting, lighted wind cone, segmented circle at Huntsville Airport. Plans deposit $25. CD 8-22.

† Alaska, Kodiak—TAXIWAY, RUNWAY—B.A. 9-12—Pub. Wks. Officer, Bldg. 5-12, Naval Operating Base, Kodiak, construct new taxiways, extend and strengthen runways 7-25 at the U. S. Naval Air Station, Spec. 24226, Nov. 20838. Plans deposit $25. CD 8-22.

LOW BIDDERS

Ill., Rock Falls—City, City Hall, sewage disposal works, addition sanitary sewers, extension, Kennedale Constr. Co., 1000 Illinois Ave., Rock Island, $526,436. C. K. Willet, 317 N. 6th, Rock Island, Ill., Engr. CD 3-17-44.

CONTRACTS AWARDED

Va., Roanoke—ADMINISTRATION BLDG., City Municipal Bldg., Roanoke, to Hall-Hall Engrs., Inc., Municipal Permit & Loan Bldg., Va., $317,432.

Neb., North Platte—ADMINISTRATION BLDG., City, North Platte, administration bldg., to Jensen, Bowen & Farrell, Broken Bow, $100,600. CD 7-27.

Tex., Midland—LIGHTING SYSTEM—City, Municipal Airport, runway lighting sys., to Rogers Elec. Co., Midland, $51,000.

Wash., Bellingham—WATERFRONT, ETC.—City, City Hall, waterfront development, Squalicum Creek to Whatcom Creek, Spec. 1950, to Ingram, $60,990.

LATIN AMERICA

▲ Brazil, Sao Paulo—[illegible] to Companhia Brasileira [illegible] $10,000,000. Bids 8-8. CD 7-19-45.

AMERICANS ABROAD

Australia—Snowy State Rivers & Water Supply Comm., 164 Castlereagh St., Sydney, construct earthen dam to be known as the Big Eucumbene Dam, which will be built below the site of the present Eucumbene embankment on the Eucumbene River, about 25 mi. northeast by road from Monaro Highway, Cooma, N.S.W., to Snowy Mountains Hydro-Electric Power Scheme, to Utah Construction Co., 550 Kearns Bldg., Salt Lake City, Utah, or U. S. A., $31,780,000.

PUBLIC BUILDINGS

BIDS ASKED

Ga., Atlanta—SCHOOL—B.A. 9/5—Fulton County Bd. Educ., c/o Norman F. Standaugh, archt., Rhodes Bldg., Atlanta. Thomasville District Consolidated Colored School. Plans deposit $50. CD 1/13/49.

Mo., Blue Springs—SCHOOL—B.A. 9-6—Bd. Educ. of Reorganized School Dist. 4, Jackson Co., Agatha Waskey, sec., brick concrete elementary school. Plans deposit $50. Dan R. Sandford & Sons, 325 Woodyard Bldg., Springfield, archts.

Ont., Ottawa—SCHOOL—B.A. 9-6—A. J. C. Smith, engr. Central Mortgage & Housing Corp., 346 Fleet St. W., Toronto, 18 classroom school, at Air Force Camp, Rockcliffe, near here. Rockcliffe D. N. D. No. 2752. Approx. $400,000. Plans deposit $50. CD 2/9, under LB.

Calif., Patton—WAREHOUSE—B.A. 9-7—State Dir. Architecture, P. Wks. Bldg., Sacramento, reinforced, 80x100 ft. commissary warehouse, Anson Blyd, Sacramento, State archt.

▲ Ill., Carbondale—SCIENCE, etc.—B.A. 9-7—State, Springfield, constr. Life Science Bldg. and Animal House, $1,247,000; constr. Industrial Education Bldg. and Swimming pool, at Southern Illinois University, $966,000. CD 4-9-45.

La., Lafayette—WAR MEMORIAL—B.A. 9-7—Lafayette Parish Police Jury, Lafayette, war memorial bldg., $360,500. Plans deposit $50. A. Hays Town, Masonic Bldg., Baton Rouge, archt. CD 1-27-50.

Mass., Concord—SCHOOL—B.A. 9-7—Town, Lawrence Morrey, ctn., General Bldg. Comm., school, $450,000. Plans deposit $50. Somes, Griswold, Boysen, Wilde & Ames, 53 State St., Boston, archts. CD 1-27-49.

† N. M., Las Cruces—TELEPHONE PLANT—B.A. 9-8—U. S. Eng., 4 Army Signal Sect., Fort Sam Houston, telephone outside plant reconstrng. at White Sands Proving Ground, Alamogordo, 41-404-51-21, $69,900. CD 7-28-49.

† New York—BUILDINGS, etc.—B.A. 9-7—Col. S. Eng., 30 Lafayette St., New York, Zone 13, administrative bldgs.

†O., Oxford—DORMITORY WING—B.A. 9-7—S. O. Lunell, dir. dorms., P. Wks., 705 Ohio Dpts. Bldg., Columbus. Women's Dormitory South Wing No. 2, at Miami University. Charles F. Cellarius, 907 St. Paul Bldg., Cincinnati, archt. H. G. Allen, Ohio Dpts. Bldg., Columbus, consult. archt. Fosdick & Hommel, Union Trust Bldg., Cincinnati, engrs. CD 5-28-45.

Okla., Oklahoma City—HOSPITAL—B.A. 9-7—School of Medicine, 801 N. E. 13 St., Zone 5, substation, Veterans Administration, addn. to University Hospital, $600,000. Plans deposit $50. Layton & Forehand, Apco Tower, archts. CD 6-27.

Tex., College Station—ADMINISTRATION—B.A. 9-7—Agricultural & Mechanical College of Texas, College Station, administration bldg. $372,000. Plans deposit $50. H. Voelcker & Assoc., 1202 Dennis St., Houston, archts. CD 11-28-49.

Tex., Teague—SCHOOL—B.A. 9-7—Teague Independent School Dist., Teague, Brice, Hollow Tile elementary school, concrete slab fdn., $250,000. Plans deposit $50. Stanley Simmons, S. Broadway at 9 St., Tyler, archt.

Va., Charlottesville—POWER PLANT, etc.—B.A. 9-7—Office of Dr. Dabney W. Darden, Jr., pres., University of Virginia, Charlottesville, constr. power plant, incl. coal and ash handling equip. and chimney, $300,000. Wiley & Wilson, 905 Peoples Bank Bldg., Lynchburg, consult. engrs. CD 10-11-44.

Ont., Barrie—SCHOOL—B.A. 9-7—A. J. F. Smith, engr. Central Mortgage & Housing Corp., 346 Fleet St. W., Toronto, 18 classroom school at Army Camp, Barrie-Borden P. O. No. 2740. Approx. $400,000. Plans deposit $50. CD 12-2.

Mass., Abington—SCHOOL—B.A. 9-8—Town, School Dist. Army, Veterans, etc., addn. to 16 classroom school, adjacent to Senior High School, $500,000. CD 11-24-49.

Mass., Holyoke—NURSES' HOME—B.A. 9-8—Commonwealth of Mass., Mayflower, 3 story, Bennett, $240,000. Wm. Nelson Jacobs, 460 Park St., Beacon, archt. CD 12/19/49.

Mass., Wareham—SCHOOL—B.A. 9-8—Town, School Dist., 1 and 2 story high school, at Minot Rd. Plans, Chester Kay, Rm. 165 Newbury St., Boston, archts. CD 5-11-49.

N. D., Grand Forks—ENGINEERING—B.A. 9-8—State Bd. Higher Educ., Engineering Bldg. at State College of Agric. & Engrg. of North Dakota, $400,000. Wells & Dewhirst, Grand Forks, archts. CD 11-2.

Wis., Fennimore—COMMUNITY MEMORIAL—B.A. 9-8—City and American Legion Fennimore, 3 story & basement, community memorial bldg., Post Room, $50. Bertram & Bertram, 197 Jones St., Beloit, archts.

Pa., Brothers—HIGH SCHOOL—B.A. 9-8—Clair S. Bowman, Supervisor, 131 W. Market St., York, R. D. No. 1, for Southern York County School Dist., Arthur Miller, engr., R.D. 1, $400,000.

Va., Lynchburg—SCHOOL, AUDITORIUM—B.A. 9-11—Office of Supt. of Schools, Dr. Joseph E. Burnett, 9 N. 12 St., for high school and auditorium at State College site, for fertilizer plant, $675,000. Plans deposit $50. Stanhope S. Johnson, 1708 Allen Avenue Bldg., Detroit. CD 1-5-49.

Wis., West Allis—HIGH SCHOOL—B.A. 9-11—Bd. [illegible] National Ave., Zone 14, 3 story

COMMERCIAL BUILDINGS

210x115 ft. steel, brick block. Jone Dewey Junior High School addn; concrete fdn. and floors, steel, Schutte & Assoc., 600 N. 3 St., Milwaukee, Zone 3, archts. Bids 8/7 rejected Lo. B. $237,987.

Calif., Concord—ARMORY—B.A. 9-12—State Div. Architecture, P. Wks. Bldg., Sacramento 14, 22,000 sq. ft., rein.-con. Type A armory for Calif. National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Madera—ARMORY—B.A. 9-12—State Div. Architecture, P. Wks. Bldg., Sacramento, 21,000 sq. ft., rein.-con. Type A armory for Calif. National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Modesto—HOSPITAL UNIT—B.A. 9-12—Stanislaus Co., Courthouse, 3 story, flireproof, reinforced, central hospital unit, $800,000. Plans deposit $50. Russell J. Snook, Stage, Claremont Hotel, Berkeley, archt. CD 6-14-49.

Calif., Mount Shasta—ARMORY—B.A. 9-12—State Div. Architecture, P. Wks. bldg., Sacramento, 11,000 sq. ft., rein.-con. armory for Calif. National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Nevada City—ARMORY—B.A. 9-12—State Div. Architecture, P. Wks. bldg., Sacramento, 11,000 sq. ft. Type A, rein.-con. armory for Calif. National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Calif., Woodland—ARMORY—B.A. 9-12—State Div. Architecture, P. Wks. Bldg., Sacramento, 11,000 sq. ft. type A, rein.-con. armory for Calif. National Guard. Plans deposit $25. Anson Boyd, Sacramento, state archt.

Mich., Big Rapids—SCHOOL—B.A. 9-12—State, A. N. Langius, Dir., State Bldg. Dpt., 115 State Office Bldg., Lansing; brick, steel frames. Let-time $900,000. Rozer Allen & Assoc., 1126 Grand Rapids National Bank, Grand Rapids, archts. CD 8-14.

▲ Okla., Norman—DORMITORIES, DINING HALL—B.A. 9-12—University of Oklahoma, Bd. Regents, Norman, Jeremiah Sparkman, secy., Norman; 3 dormitories, 384 beds, dining hall and recreation, 2 story, $400,000 each; dining hall and recreation, 2 story, $400,000. Sorey, Hill & Sorey, 809 N. W. 36 St., Oklahoma City, archts. CD 8/17.

▲ Pa., Reading—COUNTY HOME—B.A. 9-14—Berks County, Harry S. and Court St., county home, $2,000,000. Muhlenberg, Yerkes & Muhlenberg, Gansler Bldg., archts. CD 1-25-49.

▲ Calif., Los Angeles—ADMINISTRATION—B.A. 9-15—Regents University of California, 405 Hilgard Av., Los Angeles, 4 story 68,000 sq. ft. Veterans station bldg., stm. ht. B.A. $1,400,000. Douglas McLellan & Assoc., 816 W. 5 St., archts. CD 8-24-49.

▲ N. C., Wilson—SANITARIUM—B.A. About 9-15—State, Wilson Eastern Tuberculosis Sanitorium, $1,500,000. Walter W. Hook & Assoc., 305 W. 4 St., Charlotte, archts.

▲ Calif., San Jose—SCHOOL—B.A. 9-14—San Jose Unified School Dist., 408 Alameda St., 2 and 2 story, rein.-con., steel frame, Senior High School, $2,927,350. Plans deposit $50. Kump & Faix, 9 Main St., San Francisco, archts. CD 2/27/48.

LOW BIDDERS

Ala., Opelika—HOSPITAL—Lee Co., Alm. 16, Hospital, from Burton-Cook Co., West Point, $708,954. CD 7/24.

Ark., Camden—HOSPITAL—Ouachita Co., Camden, July 31, hospital, from Atlas Constr. Co., Texarkana, $659,480. CD 7/7.

Conn., Storrs—COLLEGE OF PHARMACY—State, State Capitol, Hartford, rejected bids Aug. 9 on use of Capitol Hartford, rejected bids Aug. 9 on use of Capitol Hartford; 3 bids received, Lo. B. $634,423, est. $480,000. Under LR.

▲† Idaho, Arco—LABORATORY—Atomic Energy Comm., 1901 Constitution Ave. N.W., Wash., D. C., 132x260 laboratory-corridor laboratory, from F. H. Wiswall Co., 780 Wooster St., Hartford, Conn., $1,247,000. Post Eng. Co., 575 6 Ave., Pittsburgh, Pa., engrs. CD 6/9.

▲ Ill., Chicago—HOUSING—Chicago Housing Auth., 608 S. Dearborn St., Zone 5, Aug. 17, two 7 story apartments, Housing Site No. 7, Ida and Throop Sts., $1,234,500. CD 7/14.

Wash., Longview—SCHOOL—Longview Dist. No. 122, Longview, general contract Aug. 14, 2 story, reinforced concrete high school, frame & T. Hedemoser, Longview, $916,194. est. $1,400,000. CD 7/18.

▲ Puerto Rico—HOUSING—Municipal housing Auth. of Puerto Rico, Caserio San Antonio, Avenida Fernandez Juncos, Puerto de Tierra, Puerto Rico, Aug. 19, 1 project, 882 dwelling units in 16 two story, 4 family apartments, Project PR 2-9-1, Lowest Tierras from Kayle Zeluck Co., Owner, $3,896,000. CD 7/19.

CONTRACTS AWARDED

▲ La., Ruston—GYMNASIUM—State, Ed. Education, Capitol Bldg., Baton Rouge, auditorium & gymnasium, Psychology Unit title 1, Lot title 2, Lot title 3, 127x, Baton Rouge, $1,080,000. CD 6/16.

▲ Mass., Lynn—HOUSING—City Housing Auth., 483 Washington, 400 Apt. Development, Ave. to Boston, $4,090,000. Bids 8/10. Awarded 8/16. CD 8/16.

Mich., Grand Rapids—POWER PLANT—City, Lighting Dept., power plant and substation, 6,000 kw cap., diesel engine, to Nordberg Mfg. Co., 3073 S. Chase Ave., Milwaukee, Wis., $486,100. Owner handling, $13,900.

▲ O., Cleveland—POWER PLANT—City, City Hall, addition, power unit to main Cuyahoga Constr. Co., 1750 E. 17 St., $1,927,038. Bids 8/11. CD 7/19.

BIDS ASKED

Miss., Meridian—HOTEL—B.A. 9-?—Lamar Hotel, Eva L. L. Brister, Pres., 203 Kidder Bldg., Hotel, addn. Plans deposit $5.

Idaho, Boise—HOSPITAL—B.A. 9-14—St. Alphonsus Hospital, 4-5 story, 75 bed, hospital addn., $875,000. Fisher & Fisher, Denver National Bldg., Denver, Colo., archts.

Okla., Oklahoma City—Y.M.C.A. BLDG.—B.A. 9-13—Y.M.C.A. 120 N. W. 2 St. Zone 2, issued Y.M.C.A. bldg. 608 N. E. 4 St. $525,000. Plans deposit $25. Parr & Aderhold, Halen Bldg., archts.

Ill., Chicago—APARTMENT—B is Asked—7210 Sheridan Rd. Bldg. Corp., c/o W. B. Colen & Assoc., archts., 624 S. Michigan St., Zone 5, 47 units of apartment, 7710 Sheridan Rd. $300,000.

Ill., Hinsdale—SHOPPING CENTER—B.A. Asked—Owner c/o Hubert Bebb & Assoc., archts., 306 W. Chicago Ave., 1st unit shopping center unit, and three 1 and 2 story flats, and parking lot, $350,000. CD 10-5/49.

Pa., Phila.—CHURCH—Bids Asked, St. Benedicts Roman Catholic Church, 4400 Aldine St., church, $250,000. Gideon & Mooney, 1612 Market St., archts.

SOON LETS CONTRACT

Ga., Hapeville—APARTMENT DEVELOPMENT—Portview Apartments, Inc., c/o John E. Sumner, archt., 177 N. Peachtree St., Atlanta, soon lets contract, apartment development. Plans deposit $25.

Pa., Phila.—CHURCH—Bernard M. Raney, archt., West Chester, soon lets contract, church for St. Barnabas Roman Catholic Church, $300,000. Bids Asked Soon.

LOW BIDDERS

Pa., Upper Darby—OFFICE—Bell Telephone Co. of Pennsylvania, 416 Arch St., Phila., Aug. 19, office, from Joseph R. Farrell, Inc., 4424 Market St., Phila., $500,000. CD 8/15.

S. D., Hot Springs—HOSPITAL—West River Cripples Childrens Hospital & Polio Center, Hot Springs, Aug. 8, general contract hospital, from Riesland Constr. Co., Rapid City, $327,300. CD 8/3.

Wash., Seattle—THEATER—Sportsgate Co., Inc., 1036 Northgate West Dr., theater bldg., from W. G. Clark Co., 406 Aurora Ave., Seattle $256,042. John Graham & Co., Dexter Horton Bldg., Zone 4, archts.

CONTRACTS AWARDED

Ala., Birmingham—HOMES—Oak Grove Homes, c/o contractor, 104 homes, to G. A. Pair, 14 Bonita Dr., Birmingham, $600,000.

▲ Calif., Culver City—DWELLINGS—Duke Kalman, 1507 Wilshire Blvd., Los Angeles, 347 frame, stucco dwellings in Sunkist Park, Owner, to $3,250,000. Southwest Building Service, 2724 Florence Ave., Los Angeles, archts.

▲ Calif., Ford Ord—HOUSING—Dpt. Army, Post Asst. and Fort Off. Inst Commanding General, 6th Army, Presidio of San Francisco construct housing and finance 500 unit housing development to Namiat, Huntington Park, $4,500,000. CD 11/23.

Calif., Hayward—RESIDENCES—Leona Properties, Inc., 325 13 St., Oakland, 80 residences in Tract 1032, to T. R. Beckett Co., 315 13 St., Oakland, $472,800.

▲ Calif., La Mesa—DWELLINGS—Brookside Homes Inc., 9601 Imperial Ave., 220 frame & stucco dwellings at LaMesa Golf & Country Estates, to Brown & Sons, 2894 Browns Ave., Los Angeles, $1,496,000. Wm. Bray, 4633 Wilshire Blvd., Los Angeles, archt.

Calif., Los Angeles—STORE—Security Victory Corp., 1424 Fresno St., 44x100 ft., masonry store, Owner builds, $275,000. Stanley A. Mier, 6255 Van Nuys Blvd., archt.

Calif., Los Gatos—HOUSE—Sisters of the Holy Name, c/o Minton & Smith, archts., 1045 Sansome St., San Francisco, Novitiate Provincial House and Novitiate, formerly home to Rose McCarthy Co., 1050 Kirkham St., San Francisco, $750,000. CD 12-29-49.

Calif., Redondo Beach—DWELLINGS—O. K. E. Corp., 17th N. Manter St., Los Angeles, 2 story, frame & stucco dwellings at Prospect Ave. and Redondo Beach Blvd., $900,000. Loring & Chandler, 741 Beverly Blvd., engrs.

Calif., San Francisco—SCHOOL ADDNS.—Center of the Good Shepherd, 151 Castenada St., San Francisco, school addns., to Rist McCarthy Co., 1050 Kirkham St. Approx. $800,000. Paul A. Ryan & John Michael Lee, 1095 Market, San Francisco, archts. and Felix H. Soiter, 20 Market St., San Francisco, engr. CD 12-1-49.

Del., Claymont—RESIDENTIAL DEVELOPMENT—Brandywine Homes, Inc., Wooring Park, Wilmington, residential development, Livingston Dr., separate contracts, $250,000.

Fla., Miami—HOMES—Ben Sam Corp., c/o contractor, 26 homes, to Nemon Constr. Co., 1514 S. W. 3 Ave., Miami. Approx. $300,000.

Fla., Miami—HOMES—Brown Development Corp., c/o contractor, to Freeman Builders, 721 N. W. 27 Court, Miami. Approx. $350,000.

Ga., Atlanta—APARTMENT DEVELOPMENT—Fairmont Terrace Apartments, c/o contractor, apartment development, to Scruggs & Scruggs, 189 Cain St., N. E., Atlanta. Approx. $250,000. CD 7/18.

Ga., Macon—APARTMENT DEVELOPMENT—New Street Inc., c/o contractor, apartment development, to A. R. Berg Constr. Co., Sec. Arch. St., Macon. Approx. $250,000.

Ill., Chicago—OFFICE, Bureau Development Committee of Sears Water & Zone 11, office remodel bldg., Lawrence Ave. & Kimball Ave., Zone 25, alterations, $300,000. Awarded 8/14. CD 7/15.

Ill., Chicago—OFFICE—Wentworth Motor Freight Inc., 2656 W. Zone 12, $1,000 sq. ft. office and garage to City Wide Plumbing & Heating Co., 5400 N. Western St., Zone 25, $275,000. E. F. Quinn & Assoc., 224 N. Lakeside, Zone 2, archts. Awarded 8/15.

Ill., Decatur—Y.M.C.A. BUILDING—Decatur Y.M.C.A. Preparatory Committee, Inc., general contract 4 story brick Y.M.C.A. bldg. incl. swimming pool, gym and associate worker residence, 1 story brick, for Roy W. Crawford, archt. CD 7/20, awarded 8/17. CD 7/20, under LR.

$914,192.

Kan., Mission—DWELLING—Mission Land Co., Fire Nat. Ave. Overland Park, thirty-one dwellings, owner builds, $257,300.

Ky., Louisville—RESIDENCES—Cooper Constr. Co., 2523 Manchester Rd., Zone 4, sixty residences, to Cooper Constr. Co., 2523 Manchester Rd., Zone 4, $720,000. Awarded 8/17.

▲ Md., College Park—SHOPPING CENTER—College Park Shopping Center, Inc., 8614 Cotteville Rd., Silver Spring, 1 story brick, under Block shopping center, parking area, Baltimore Blvd. and Knox Rd., to W. Brady Smith & Co., Inc., 635 F St., N. W., Washington, D. C., $2,000,000. Awarded 8/15. CD 6-17.

▲ Mich., Dearborn—HOSPITAL—Oakwood General Hospital, Donald B. McGrath, pres., Oakwood Hospital Bd., 6 story, brick, steel hospital in Oakwood Section, turn to W. E. Wood Co., 4649 Humboldt, Detroit, $1,422,000. CD 11-22/49.

Mich., Pontiac—HOUSING—Fairfax Homes, Inc., 1944 Jones, Country Club, forty-eight single homes, and Josyln Gardens, Josyln Constr. Co., 1944 Josyln Court, Cousens Hy., $345,600.

Mich., Saginaw—SEMINARY—Michigan Lutheran Seminary, 1 story, 2104 Court St., Saginaw, brick seminary, to Kreger Constr. Co., 1401 Broadway St., $310,000. CD 4-2-49.

Miss., Biloxi—HOMES—Marshall Engineering Co., Biloxi, thirty-two homes, owner builds, $250,000.

Miss., Jackson—STORE—S. H. McRae Co., c/o Lyon Tractor Department store addn. to Jordan Constr. Co., P. O. Box 975, $250,000.

Mo., Clayton (St. Louis P. O.)—STORE—Kuner's West End Grocery Inc., Richard J. Kuner, pres., 6/0 Washington Ave., St. Louis, Zone 1, 2 story, 136x154 ft. brick, conc. fdn., stone 40,000 sq. ft. department store at 7620 Forsyth Blvd., to Design Associates, 7620 Forsyth Blvd., Zone 5, and S. N. Kruemes, 9th Story St., St. Louis, Zone 1, archt. CD 5-2.

▲ Mo., Kansas City—APARTMENT—George Norton, 4000 Normandy Lane, 6 bldgs., 1 story, 120 unit Townwood Garden Apartments at 49 and Paseo, to George Norton, 101c Baltimore St., Zone 6, $1,000,000. Jesse F. Lasek, 6225 Brookside, Zone 2, archt. CD 7-24.

N. J., Camden—RESIDENTIAL DEVELOPMENT—Joe D'Anastasio, 215 W. 2 St., Camden, residential development, 215 W. 2 Ave. separate contracts, $250,000. Dante D'Anastasio, 19 25 Federal St., archt.

▲ N. J., Camden—RESIDENTIAL DEVELOPMENT—Executive Park, c/o W. S. Peach Co., Inc., 6/0 and Walnut Sts., Upper Darby, Pa., residential development, Fairview St. to Jonathan Woodner, 6/0 and Walnut Sts., Upper Darby, Pa., $4,050,300.

▲ N. J., Hamilton Twp. (Trenton P. O.)—RESIDENTIAL DEVELOPMENT—Philip Soldrel, 3200 Nottingham Way, Hamilton Square, residential development, Hamilton Square, separate contracts, $1,500,000.

N. J., Lawrenceville—SCHOOL—Lawrenceville School, Lawrenceville, science bldg., to Lockwood Greene Engrs., 10 E. 40 St., New York, N. Y., $300,000. Bids 4-24. CD 3/14.

▲ N. J., Little Falls—HOUSES—Bergen County Housing Corp., Samuel D. Schwartz, archt., 2111 Broadway, New York 10, N. Y., 10c houses, to be called Nathaniel Hawthorne Gardens, Owner builds, $1,000,000.

N. J., Ocean City—RESIDENTIAL DEVELOPMENT—Stocco Homes, Inc., 606 Ocean Ave., residential development, various locations, separate contracts, $250,000. J. Bayne Williams, 8005 Ventnor Ave., Margate, engr.

N. J., Palmyra—APARTMENT DEVELOPMENT—M. J. T. East Corp., 1429 Walnut St., Philadelphia, Pa., apartment development, Cinnaminson Ave., separate contracts, $300,000.

N. J., Pennsauken—RESIDENTIAL DEVELOPMENT—L. Evans Hurley, 627 Cooper St., Camden, residential development, Avon Ave. and Cove Rd., to Jack N. Mitch, 2406 Haddon Ave., $250,000. Arthur B. Gill, 111 N. 4 St., Camden, archt.

▲ N. J., South Plainfield—HOUSES—Suburban Homes, Inc., c/o C. B. Cannan, archt., 620 Union Ave., Middlesex, 200 houses, Hartz and May Products and Park Ave., Owner builds, $1,500,000.

▲ N. J., Springfield—APARTMENT PROJECT—General Green & Vogt Inc., c/o McMurray & Chrystie, architects, 160 Stuyvesant Ave., Irvington, 2 story garden apartment and shopping center on 16 acre tract, Morris Ave. and Linden Ave., Owner builds, $1,500,000.

N. J., Teaneck—HOUSES—Douglas Park Homes, c/o Frederick A. Hansen, archt., Summit St. and E. Main road Ave., Tenafly, 55 homes on 8 acre tract, Morris Ave. and Park Ave., Owner builds, $350,000.

N. Y., Bayside — HOUSES — E. H. & C. Homes, c/o S. W. Katz, archt., 527 Fifth Ave., New York, Zone 7, 62 one family houses on 218 and 217 Sts., north and south of 46 Ave. Owner builds. $372,000.

N. Y., Bellmore — SHOPPING CENTER—Bellmore Constr. Corp., c/o A. H. Salkowitz, archt., 37-40 82 St., Jackson Heights. 250x404 ft. shopping center Bedford Ave at the southeast corner of Oak St. Owner builds. $500,000.

▲ N. Y., Bethpage — HOUSES — Art Homes, c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, 225 one family houses on 45 acre tract on State Hy. No. 107. Owner builds. $2,000,000.

▲ N. Y., Bethpage — HOUSES — Bethpage Developers Corp., c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, 225 houses on 45 acre site on State Hy. 107. Owner builds. $1,500,000.

▲ N. Y., Bethpage — HOUSES—Manlee Builders, c/o Mitten & York, archts., 9064 161 St., Jamaica, 240 one family houses to be known as Pine Tree Manor on 50 acre site on Stewart Ave. Owner builds. $1,250,000.

▲ N. Y., East Meadow — HOUSES—Clearmeadow Assoc. Inc., c/o John W. Burton & Assoc., archts., 163-18 Jamaica Ave., Jamaica, 300 one family houses on 60 acre tract on north side of Hempstead Turnpike near Wantagh Causeway. Owner builds. $3,000,000.

▲ N. Y., East Meadow — HOUSES—Mitchell Gardens Homes, c/o Alwin Cassens, jr., archt., 114-05 Queens Blvd., Forest Hills, 145 one family houses on 40 acre site on Westbridge Ave., north of Jerusalem Rd. Owner builds. $1,250,000.

▲ N. Y., Garden City — HOUSES—Moss & Sons, Bellmore Rd., Bellmore, 120 one family houses on New Hyde Park Rd. Owner builds. $1,500,000. Anthony & Dominick Salvati, 26 Court St., Brooklyn, Zone 2, archts.

N. Y., Hastings — APARTMENTS—Communities Redevelopment Corp., c/o Raymond & Rada, archts., 101 Park Ave., New York, Zone 17, garden apartments on 4 acre site on west side of Maple Ave. to John W. Harris Assoc., 30 Rockefeller Plaza, New York, Zone 20. Approx. $750,000.

N. Y., Hempstead — HOUSES—Brentwood Estates, c/o John Burton, archt., 163-18 Jamaica Ave., Jamaica, 50 houses on Merrick Ave. Owner builds. $500,000.

▲ N. Y., Hempstead — HOUSES—Knickerbocker Homes, c/o Oscar I. Silverstone, archt., 154 Pierrepont St., Brooklyn, Zone 2, 160 houses at Uniondale Ave. and Nassau Rd. Owner builds. $1,500,000.

N. Y., Howard Beach — HOUSES—Sherman Homes, c/o Alwin Cassens, jr., archt., 114-05 Queens Blvd., Forest Hills, 89 one family houses on area bounded by 159 Ave., 86 St., 157 Ave., and 92 St. Owner builds. $712,000.

▲ N. Y., Jamaica — APARTMENT—Weiford Const. Co., c/o Seelig & Finkelstein, archts., 154 Pierrepont St., Brooklyn, Zone 2, 8 story apartment on west side of Highland Ave. between Upland Parkway and 167 St. Owner builds. $1,440,000.

N. Y., New Hyde Park — HOUSES—Bengar Builders, c/o Samuel Paul, archt., 163-18 Jamaica Ave., Jamaica, 14 one family houses 77 Ave., 77 and 79 Rds. Owner builds. $340,000. Samuel Paul, 163-18 Jamaica Ave., Jamaica, archt.

▲ N. Y., New York — OFFICE—Lever Bros., 30 Varick St., Zone 13, 19 story headquarters offices at 390 Park Ave. to George A. Fuller Co., 597 Madison Ave., $4,500,000. Bids 8/4. CD 7/12.

N. Y., Uniondale — HOUSES—Rutledge Homes, c/o Alwin Cassens, jr., archt., 114-05 Queens Blvd., Forest Hills, 60 houses at Jerusalem Ave. and Smith St. Owner builds. $250,000.

▲ N. Y., Woodmere — HOUSES—Town Land Corp., c/o Martin & York, archts., 90-04 161 St., Jamaica, 200 houses known as Woodmere Oaks on Hollywood St. and Hawthorne Ave. Owner builds. $4,000,000.

▲ N. Y., Yonkers — APARTMENT—Syndicate, c/o Jacob Weinstein, 1133 Broadway, New York, Zone 23, 17 story apartment at Kimball and Palmer Aves. Owner builds. $1,000,000.

O., Toledo — HOUSES—R. G. Dunbar, Inc., 3410 Upton Ave., 250 homes on Jeffrey Estates between Indian Rd. and Central Ave. west of Evergreen Rd. Owner builds. Karl H. Baker, Jeffrey Bldg., Ralph W. Commerford, 4126 Monroe St., archts.

Pa., Boothwyn — RESIDENTIAL DEVELOPMENT—Del Ave Homes, 1151 W. Chester, redevelopment. Owner builds. Architect not selected. $400,000

Pa., Chester — RESIDENTIAL DEVELOPMENT—Penn Materials, 2 W. 45 St., New York, redevelopment project, 4 acre site opposite Lamokin St. $250,000

Pa., Erdenheim (Phila. P. O.) — RESIDENTIAL DEVELOPMENT—Valley Forge Development Corp., 1500 Walnut St., Phila., residential development on Valley Forge Rd., etc. separate contracts. $250,000.

Pa., Flourtown — RESIDENTIAL DEVELOPMENT—Flourtown Homes, 1500 Walnut St., Phila., 50 one family residential development Mowery & Uhler, Inc., general contract. $250,000

Pa., Johnstown — COMMUNITY CENTER—Johnstown Y.M.C.A., 4 Franklin St., 3 story brick community center, Architect not selected. Owner builds. Swank Bldg. Approx. $250,000. Bids 8/7.

Pa., Lansdowne — RESIDENTIAL DEVELOPMENT—Penrose Development Corp., 1500 Walnut St., Phila., 50 one family houses on Penrose Ave. between Yeadon and Lansdowne Aves. Owner builds. $350,000

Tex., Dallas — SHOPPING VILLAGE—S.&E. Corp., Box 2394, shopping village, Pleasant Grove on Buckner Blvd. Owner builds. $450,000.

Tex., Houston — APARTMENTS — Wm. F. Appelt & Assoc., 2401 Dickey St., four 30 unit apartments. Owner builds. $725,000.

Tex., Houston — SHOPPING CENTER — Wm. F. Appelt & Assoc., 2401 Dickey St., shopping center. Own forces. $375,000.

Tex., Houston — DWELLINGS—Carolina Gardens Development Co., 2401 Blodgett St., 35 dwellings, west of extens. of Scott Rd. east of Almeda Rd. to Carolina Gardens. Buildings Co., 2412 Blodgett. $280,000. CD 7/27.

Tex., Houston — DWELLINGS — C. L. Fitzhenry, 1105 Archer St., 33 dwellings. Owner builds. $335,000. CD 8/8.

Tex., Houston — DWELLINGS—Garden Oaks Realty & Building Co., 4331 Ella Blvd., 50 dwellings, in new area of Oak Forrest. Owner builds. Approx. $525,000. CD 7/27.

Tex., San Antonio — DWELLINGS—Jackson Terrace, Inc., 3219 West Ave., 59 dwellings, Vance Jackson and Landa Rds., to Jonathan Woodner Co., 3219 West Ave. Approx. $480,000. CD 8/10.

Tex., Houston — DWELLINGS — Lawrence O'Donnell & Assoc., 4302 Humble Rd., 100 low cost homes. Own forces. $435,000. CD 7/31.

▲ Tex., Houston — OFFICE—San Jacinto Hotel, Main and Walker Sts., addn., conversion and remodel ex. existing 10 story hotel, San Jacinto Hotel into an office bldg. to Brown-Bellows-Smith, Inc., 716 N. Everton St. Approx. $1,750,000. Kenneth Franzheim, 2306 Crawford St., archt.

Tex., Houston — DWELLINGS—Suburban Homes Realty Co., c/o Lawrence O'Donnell, 9102 Humble Rd., 100 dwellings. Own forces. Approx. $465,000. CD 7/31.

Tex., Houston — HOUSING — Utley Constr. Co., 4407 Alice St., housing proj. Owner builds. Approx. $250,000. CD 8/11.

Tex., San Antonio — DUPLEXES — Quincy Lee & Astor Gunter Bldg., duplexes in Terrell Hills. Owner builds. Approx. $365,000. CD 6/23.

Tex., Waco — EDUCATIONAL, CHAPEL — First Baptist Church, Waco, 2 story, bsmt., educational and chapel to McLellan-Brown-McLellan, 2215 Franklin St. $517,392. Bids 8/11. CD 8/21, under LB.

▲ † Wash., Spokane — HOUSING — Dpt. Air Force, Pentagon Bldg., Wash., D. C., construct, manage and finance, 201 houses and 579 duplexes at Spokane Air Force Base to Guthrie Constr. Co., N.2418 Nevada St. $3,600,000.

Alaska, Anchorage — CLUB—National Council of Young Mens Christian Assn., c/o Manley & Mayer, archts., Loussac-Sohn Bldg., 2 story 68x120 ft. rein. con. club, 6/22 to J. B. Warrack Co., Securities Bldg., Seattle 1. Work. $275,000. Est. $300,000. Bids 8/14. CD 8/11.

INDUSTRIAL BUILDINGS

BIDS ASKED

Que., Quebec City — SERVICE CENTER—B.A. Oil Co., Wm. Patterson, Townsend and Hendron, archts., Dominion Square Bldg., Montreal, 1 story with garage and covered area for office, 100x114 ft., concrete, structural steel, service center, 1055 Crémazie and St. Vallier, to Bel Telephone Co. of Canada, Ltd., 1050 Beaver Hall Hill, Montreal. Approx. $250,000. CD 7/26, under LB.

Del., Wilmington — WAREHOUSE, etc. — Bids Asked — Alagia Corp., Elkton, Md., warehouse and office, $75,000. James F. Pierce, Kooser Avondale, Pa., archt.

Md., Baltimore — WAREHOUSE — Bids Asked — Great Atlantic & Pacific Tea Co., 210 N. Franklintown Rd., warehouse and terminal. $400,000.

CONTRACTS AWARDED

▲ Conn., Stratford — FACTORY, OFFICE ADDN. — Manning, Maxwell & Moore, Inc., 261 Fifth Ave., New York, 3 story and basement addn. to Lamson Mfg. & Foundry Corp., 1 Lamson Pl., to Lamson Mfg. & Foundry Corp. Engineer. Approx. $1,750,000.

▲ Ill., Lansing — FOUNDRY, factory, Mott & Ingr. Co., 1411 Ridge Ave., Lansing, to Mott Foundry & Machine Co., 1400 Ridge Ave., Lansing. Melvin Park. Approx. $1,000,000. Awarded 8/15.

▲ Ind., Michigan City — PLANT—American Gypsum Co., Rockefeller Center, New York, N. Y., veneer drying plant, separate contracts, $1,000,000. Louis Jallade, Jr., Co., 30 Rockefeller Center, New York, N. Y., engineer.

Ia., Charles City — PLANT—Hydraulic Laboratories, Inc., 30 Church St., New York, N. Y., addn. to chemical plant. Approx. $300,000.

Ky., Henderson — WAREHOUSE—Cooperative Seed and Grain Co., 1 story, part 3 story, 84x125 ft. concrete block warehouse and elevator addn., Chanel Rd. to Bell & Gross Co., Richmond, Ky. engrs. $100,000.

Mich., Bay City — FACTORY, addn. to Industrial Tool Products, 2 to 3 story, 75x100 ft. addn. to Austin Co., 1277 Euclid Ave., Detroit. $126,700.

Mo., St. Louis — PLANT—Pevely Dairy Co., 1035 Paul St., Zone 4, 1 story, part bsmt., 103x521 ft. and 124x5 ft. building, concrete block, steel plant addn. at 1025 Paul St., to A. H. Haeseler Building & Contracting Co., 2346 Palm St., Zone 7. $100,000. Hawthorn Finishing Co., 1035 Paul St., Zone 4, lessee. CD 10/24/49.

N. J., Camden — WAREHOUSE, etc.—Lowry-Rodgers Co., 12 and Ferry Aves., Camden, 1 story 208x357 br. brick, concrete, steel warehouse and office alterations, to John B. Lawrence, 343 Hazel Ave., Westville, N. J. Approx. $150,000. Nelson E. Balzenberger, 342 Park Ave., Collingswood, archt.

N. Y., Kew Gardens — GARAGE — Jack Goodstein Corp., c/o Lawrence Rottenman, archt., 332 E. 149 St., New York, Zone 51, 2 story, garage and recreation hall on west side of Kew Gardens Rd. between 83 Dr. and Lefferts Blvd. Owner builds. $250,000.

O., Toledo — WAREHOUSE — Donovan Wire & Iron Co., 805 Chicago St., 69x168 ft. warehouse for handling steel with overhead cranes at 810 Chicago St. to Stanford E. Thal, Inc., 145 Maumee St. Approx. $100,000.

▲ Okla., Ponca City — LABORATORY — Continental Oil Co., Ponca City, 3 story rein.con. laboratory, to Wright-Abbott Corp., 222 South Ave., Plainfield, N. J. $2,250,000. CD 9/2/48.

▲ Pa., Pittsburgh — PLANT — Reed-McJunkin Dairy Co., 1345 Forbes St., 1 and 2 story 217x241 ft. brick block ice cream plant to Crump, Inc., 4032 Bigelow Blvd. Approx. $1,500,000. Bids 8/21. CD 8/15, under LB.

UNCLASSIFIED

LOW BIDDERS

Ala., Decatur — NATURAL GAS SYSTEM — City, Aug. 21, natural gas system, from E. Adams, 3700 20 Ave. N., Birmingham. $795,000. CD 8/3.

▲ Que., Montreal — CHALET, etc. — City, J. A. Mongeau, Ty., to complete chalet, bath house, etc., at St. Helens Island from J. P. Cartier, 424 Jean Talon St. W., Montreal. Approx. $2,007,582. CD 7/21.

CONTRACTS AWARDED

▲ Ala., Huntsville — NATURAL GAS SYSTEM — City, natural gas system, to P. A. Buchanan Pipe Co., 638 Woodland Ave., S.W., Birmingham. $1,038,173. Bids 8/2. CD 8/16, under LB.

Calif., Long Beach — BERTHS — City Harbor Dpt., 1333 El Embarladero St., water and sprinkler lines, storm drains, retaining walls, etc. for Berths 8, 9 and 10, Pier A, to Walter C. Groshong, 4335 California St., Long Beach. $61,261. A. J. Amar, port mgr. CD 8/14.

Fla., Miami Beach — SWIMMING POOL — Atlantic Towers Hotel, to contractor to Gilber Corp., Co., 523 Michigan Ave., Miami Beach. $50,000.

▲ Ga., La Grange — LAKE DEVELOPMENT — Callaway Foundation, c/o John Leon Hoffman, Inc., Forsythe, Development Bldg., Atlanta, 4 acre lake, sewer sys., club house, etc., force account. $1,000,000.

Ky., Paintsville — SWIMMING POOL — City, Paintsville, swimming pool and bath house, to Jack Childers Constr. Co., Cumberland. $91,515. Awarded 8/15. Brock & Johnson, 144 Barr St., Lexington, archts.; Howard K. Bell, 553 S. Line St., Lexington, engr.

▲ New Mexico-Arizona — GAS LINES — El Paso Natural Gas Co., Bassett Tower, El Paso, 324 100 mi. natural gas feeder lines. Approx. $750,000; 482 mi. of welded joint natural gas pipe line carrier between Farmington, N. M. and Topock, Ariz. Approx. $39,000,000. Own forces. CD 7/19-26.

▲ N. Y., Long Island City — SUBWAY TUNNEL — Rapid Transit Comm., 250 Hudson St., New York, N. Y., 30th St. Tunnel connection to IND Div., Rt. 125A Sec. 1 and 2, to Arthur A. Johnson Co. and Mason & Hanger Co., 347 Madison Ave., New York, Zone 17. $17,236,000. Bids 8/18. CD 8/23, under LB.

O., Toledo — LIGHTING — Bd. Educ., rewire, install modern lighting at Nathan Hale, Monroe and Garfield schools, to Romanoff Electric Co., 2022 N. 14 St. $52,400.

O., Wooster — SWINE EXPERIMENT STATION, Dpt. P. Yeck, O. Lange, Dpt. Dpt. Bldgs., Columbus, Zone 15, swine experiments center in Wayne Co., 164 acre farm to incl. farrowing pens, feeding pens and brood sow barns, to Freeman Constr. Co., Wooster. $125,000. CD 6/27.

Tenn., Athens — NATURAL GAS SYSTEM — City, natural gas system, to Modern Welding Co., Inc., Owensboro, Ky. $243,372.

Tex., Beaumont — UNDERGROUND DUCTS — Gulf States Utilities Co., 342 Liberty St., to instal underground ducts to carry portable cables, Miller & Sons, Lake Charles, La. Approx. $250,000. CD 8/15.

Tex., Freeport — GAS LINES — Brazosport Independent School Dist., Freeport, natural gas lines, purchase and hire. Approx. $55,000.

Tex., Houston — PIPE SYSTEM — Hilton Oxygen Co., 2611 Clinton Dr., underground natural pipe sys. to supp oxygen into industrial plants, purchase and hire. Approx. $40,000.

Que., Quebec City — SWIMMING POOL — Municipality, swimming pool on St. Sacrament Ward, to Côté & Lafleur, Regd., 47 Notre Dame des Anges, Quebec City. $54,944. Ed. Hamel, City Hall, City engr.

Sask., Yorkton — STREET LIGHTING, etc. — Municipality, street lighting, underground wiring, standards 25 ft. high, 500 watt lamps on Broadway and Smith Sts. and all avenues from Myette to 4th, to Saskatchewan Power Comm., Regina. $94,000. Col. H. Bailey, City, city engr.

U. S. Government

GOVERNMENT OF THE DISTRICT OF COLUMBIA, DIRECTOR OF SANITARY ENGINEERING, D. C., August 9, 1950. SEALED PROPOSALS will be received in Room 426, District Building, 14th and E Streets, N. W., Washington, D. C., until 2:00 p.m., Daylight Saving Time, September 15, 1950, and then publicly opened and read for SLUDGE-DRYING AND INCINERATING EQUIPMENT, SEWAGE TREATMENT PLANT, Washington, D. C. Proposal forms, specifications and drawings may be obtained at the office of Chief Clerk, E. D. Room 427, District Building (Telephone National 6000, Extension 2378), upon the deposit of a certified check, in the amount of Fifty Dollars ($50.00) for each set, made payable to the Collector of Taxes, D. C. (3291)

United States Department of the Interior, Bureau of Reclamation: Notice is hereby given that sealed bids or Specifications No. VII-746 will be received at P.O. Box 280, Reclamation Center, Casper, Wyoming, until 10 a.m., Mountain Standard Time, September 19, 1950, and then publicly opened for furnishing and delivering Instrument Transformers for Sidney and Cheyenne Substations, Transmission Division, Nebraska-Missouri River Basin Project and Kendrick Project, Wyoming.

Copies of the standard forms and of the specifications may be obtained from the following: Applicants may obtain copies from A. A. Batson, Regional Director, New Customhouse, Denver, Colorado; and F. J. Matthews, District Manager, P.O. Box 280, Casper, Wyoming. No charge to prospective bidders for copies of the specifications, to others $0.25 per copy, not refundable. (3431)

UNITED STATES DEPARTMENT OF THE INTERIOR, Bureau of Reclamation: Sealed bids (Specifications No. 31370) will be received by Bureau of Reclamation, Boulder City, Nevada, September 28, 1950, and then publicly opened, for furnishing labor and materials and performing all work for the installation of turbines, transformers, and appurtenant equipment for units A1, A2, and A3; relocation of transformer bank "Y"; and construction of additional transformer circuits and terminal facilities for Hoover switchyard at Hoover Power Plant, Boulder Canyon Project, Arizona-California-Nevada. The work is situated at Hoover Power Plant, Boulder City, Nevada. Principal items are approximately 20,000 cu. yds. excavation; furnishing and handling 16,000 bbls. cement; furnishing and placing 1,000,000 lbs. reinforcing bars; installation of turbines and generators A3, A4, and A5; relocating transformer bank "Y"; furnishing and installing miscellaneous items of electrical and mechanical equipment; and other work. Time allowed for completion will be 710 days. For particulars address Bureau of Reclamation, Boulder City, Nevada, or Bureau of Reclamation, Building 53, Denver Federal Center, Denver, Colorado.

MICHAEL W. STRAUS, Commissioner. (3491)

OFFICIAL PROPOSALS

Bids: September 21, 1950 (3481)

Toll Booths & Equipment

THE DELAWARE MEMORIAL BRIDGE
NOTICE TO BIDDERS
CONTRACT NO. 1—ADMINISTRATION BUILDING, TOLL BOOTHS AND TOLL COLLECTION EQUIPMENT

Sealed proposals for construction of Administration Building, Toll Booths and Toll Collection Equipment for The Delaware Memorial Bridge over the Delaware River near Wilmington, Delaware, will be received by the Delaware State Highway Department at the office of the Director, Delaware Crossing Division, Continental American Building, Wilmington, Delaware, until 12 o'clock noon Eastern Daylight Saving Time (11:00 A.M. Eastern Standard Time), September 21, 1950. Immediately thereafter proposals will be publicly opened and read in the Council Chamber, Wilmington City Hall.

The entire work involves the following:

(1) Construction of one-story brick veneered administration building approximately 90 feet long by 41 feet wide overall with heating, lighting and plumbing facilities.

(2) Construction of five metal and glass toll booths, with connecting metal canopy.

(3) Furnishing and installing toll collection equipment.

(4) Furnishing and installing roadway treadle and counters.

(5) The construction of approximately 1100 feet of two (2)-inch diameter water supply line.

Work on Contract 1 shall begin promptly after the execution of the Contract. It shall be completed in accordance with the following schedule:

Administration Building Foundations, Exterior Walls and Roof, December 15, 1950. Entire contract, May 15, 1951.

Monthly payments will be made for ninety (90) per cent of the construction completed each month.

Bidders must submit proposals upon forms provided by the Department.

Each proposal must be accompanied by an acceptable surety bond or certified check to the amount of at least ten (10) per cent of the total amount of the proposal.

The Contract will be awarded or proposals rejected within twenty (20) days from the date of opening proposals. The right is reserved to reject any or all bids.

The Plans and Specifications and other contract documents may be examined at the office of the Director, Delaware Crossing Division, and at the office of the Engineers, Howard Needles Tammen & Bergendoff, 55 Liberty Street, New York 5, N. Y. One complete set of the Plans and two copies of the Specifications may be obtained from the Engineers after August 31, 1950 upon payment of $25.00. Any prospective bidder who has made such a deposit will be entitled to one print copy of the Plans upon payment of 50 cents per drawing and extra copies of the Specifications upon payment of $2.00 per copy.

All Plans and Specifications shall be returned to the Engineers and on such return $10.00 of the above payment will be refunded. No refunds will be made out of payments for extra prints of the Plans. Full refund of deposit will be made out of payments for extra copies of the Specifications. All such refunds will be made only upon return of the documents within 10 days after the opening of proposals.

State Highway Department
By: J. Gordon Smith,
W. W. Mack, Director — Chairman,
Delaware Crossing Division
August 23, 1950

Bids: September 15, 1950 (3471)

Repairs to Pier Deck, Pier Fire Walls and Grain Elevator Supports

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY GRAIN TERMINAL
COLUMBIA STREET PIER
CONTRACT GT-19

Sealed proposals for the construction of the repairs and repairs to pier deck of the Columbia Street Pier and for repairs to the foundation supports of the Grain Elevator at the Port Authority Grain Terminal, Foot of Columbia Street at Gowanus Bay, Brooklyn, N. Y., will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1101, 111 8th Ave., New York, N. Y., until 2:30 P.M., Friday, September 15, 1950 and thereafter in the Auditorium of the Authority at the same address until 2:30 P.M. on the same date, at which latter time and place said proposals will be publicly opened and read.

Contract documents may be seen at the office of the Chief Engineer and copies will be furnished upon deposit of $25 per set. The deposit will be refunded if the documents are returned in good condition, not later than 30 days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Howard S. Cullman, Chairman
New York, August 21, 1950

Bids: September 21, 1950 (3451)

Pier

PORT OF BOSTON AUTHORITY
CONSTRUCTION OF EAST BOSTON PIER NO. 1
CONTRACT NO. 3
NOTICE TO BIDDERS
PORT OF BOSTON AUTHORITY
ALTERATIONS AND IMPROVEMENTS TO THE GRAIN HANDLING FACILITIES AT THE NEW EAST BOSTON PIER NO. 1 EAST BOSTON, MASSACHUSETTS

SEALED BIDS FOR CONTRACT NO. 3

Sealed Proposals will be received by the Port of Boston Authority at its office, Commonwealth Pier No. 5, Boston, Massachusetts, until 2:00 P.M., Eastern Daylight Saving Time, on the twenty first (21st) day of September, 1950, at which time and place the bids will be opened publicly and will be read aloud.

The Contract Documents, including Specifications and Drawings, may be examined at the Port of Boston Authority, Office of the Chief Engineer, Commonwealth Pier No. 5, Boston, Massachusetts, on and after the twenty-eight day of August, 1950, every weekday except Saturdays and Holidays between the hours of 9:00 A.M. and 4:00 P.M. Contractors desiring to bid on this work may withdraw Plans and Specifications upon payment of Fifty Dollars ($50.00) for each set. Deposits will be refunded to Bidders only upon the return of Plans and Specifications in good condition within ten (10) days after the opening of bids.

Each bid must be accompanied by a certified check in the amount of Twelve Thousand Dollars ($12,000.00). A performance bond in the full amount of the contract will be required of the successful bidder.

Attention of bidders is called to the requirements of Chapter 461, Acts of 1935, as to conditions of employment to be observed and minimum wage rates to be paid under the contract; to General Laws (Ter. Ed.) Chapter 149, as amended by Chapter 480, Acts of 1939, and Chapter 699, Acts of 1941, pertaining to subcontractors and fair competition among bidders on construction; to conditions, alterations, remodeling or repair of certain buildings; also to Chapter 7, Sections 22 and 22A of the General Laws as amended by Chapter 253, Acts of 1933, pertaining to a preference in the purchase of supplies and materials, other considerations being equal, in favor first, of supplies and materials manufactured and sold within the United States and then those of supplies and materials manufactured and sold elsewhere in the United States.

The right is reserved to waive any informalities or to reject any or all bids. The contract is subject to the approval by the Governor and Council.

PORT OF BOSTON AUTHORITY
By: James R. Nolen,
Chairman

Bids: September 19, 1950 (3441)

Housing Project

PROJECT NO. PR 2-3-2
San Juan, Puerto Rico

The Municipal Housing Authority of the Capital of Puerto Rico will receive sealed bids until 2:00 P.M. on the 19th day of September, 1950, at their office in "Caserio San Antonio," Avenida Fernández Juncos, Puerta de Tierra, Puerto Rico, at which time and place all bids will be publicly opened and read aloud for the construction of the following housing project, located on the site of "Caserio Luis Llorens Torres," Loiza Street, Insular Road No. 7, Santurce, Puerto Rico:

PROJECT P. R. 2-3-2

341 dwelling units in forty-two (42) reinforced concrete apartment buildings, including utilities and site improvements, all in accordance with the Contract Documents.

The successful bidder will be required to furnish satisfactory performance and payment bonds.

Attention is called to the fact that not less than the minimum wage rates as set forth in the Contract Documents must be paid on this project, and that all wages must comply with the minimum wage laws now in effect in Puerto Rico or with the changes which may occur during the life of the contract without increase in the contract price.

Prepared forms of Contract Documents, including Plans and Specifications, are on file at the office of the Municipal Housing Authority of the Capital of Puerto Rico.

Copies of the Contract Documents may be obtained by depositing a certified check for one hundred and fifty dollars ($150.00) with the Municipal Housing Authority of the Capital of Puerto Rico for each set of the Contract Documents so obtained. The deposit will be refunded to each person who returns the Contract Documents in good condition within 15 days after the opening of the bids.

The Municipal Housing Authority of the Capital of Puerto Rico reserves the right to reject any or all bids and to waive any informalities in bidding.

A certified check or bank draft payable to the Municipal Housing Authority of the Capital of Puerto Rico, U. S. Government Bonds or a satisfactory bid bond executed by the bidder and a surety company, in the amount equal to five per cent (5%) of the bid shall be submitted with each bid.

No bid shall be withdrawn for a period of thirty (30) days subsequent to the opening of bids without the consent of the Municipal Housing Authority of the Capital of Puerto Rico.

MUNICIPAL HOUSING AUTHORITY OF THE CAPITAL OF PUERTO RICO
C. L. CLAUSELLS,
Executive Director

(Continued on page 74)

OFFICIAL PROPOSALS
(Continued from page 73)

Bids: September 20, 1950 (950)

State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y. Pursuant to the provisions of the Highway & Building Law, and special provisions for projects financed with federal aid funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time on September 20, 1950 by Henry A. Cohen, Director, Bureau of Contracts & Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects: Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts & Accounts, Albany, N. Y., and at the office of the District Engineers noted below, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for plans and proposal forms for each contract is indicated below. A refund will be made in full to bidders for the return of one set in good condition within 20 days of award or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
		DISTRICT No. 5				
		C. R. Wagner, District Engineer, 65 Court Street, Buffalo, N. Y.				
Erie	FAC NT50-1	City of Buffalo. Niagara Terrace Ind. Court St. & Porter Ave. Connections; Proj. I 895-5	1.059*	Conc. Conc. Pvt. 20"-37" Wide=0.93 mi. Conc. Type 2A=0.17 mi. Misc. Work=0.02 mi.	Asph. Plans $10.00	$25,000 $473,000
Erie	GIS P50-1	Grand Island State Parkway, G. I. S. P. 49-1	4.81	Waterproofing Pvt. & Curb	$10 Plans $2.00	2,000
		DISTRICT No. 6				
		H. F. Brunn, District Engineer, 30 West Main Street, Hornell, N. Y.				
Steuben	FAS 50-9	Addison-Tuscarora South Street, 0.11 Co. Rd. 5 Proj. 8832-1		Asph. Conc. Type 1A, Opt. 8 Sp. Alpha I-Beam 24" Alpha=124.50	$12,000 Plans $15.00	200,000
		DISTRICT No. 8				
		J. S. Boles, District Engineer, Pleasant Valley Rd., Poughkeepsie, N. Y.				
Ulster and Sullivan	SH 50-102	Woodbourne-Ellenville, Pt. II 05 2B, S. H. 49-4, Pt. 2A, S. H. 49-6, Pt. I, S. H. 49-7 & Pt. & 11-18		8" Conc. Conc. Pvt. 24" Wide=11.02 mi. Conc. Type 1A, Opt.= 0.03 mi.	Asph. Plans $25.00	$62,000 1,036,880
		DISTRICT No. 10				
		J. J. Darcy, Dist. Engr., Montauk Hwy. at Little E. Neck Rd., Babylon, L. I., N. Y.				
Nassau		East Atlantic Beach		Beach Protection 2.50 mi. Jetties	5% of Bid Plans $10.00	255,500
Suffolk	RC 50-35	Amityville Village, Broadway, SH 533, Amityville Village, SH 5300	0.68	Asph. Conc. Type 1A, Opt.=0.47 mi. Misc. Work=0.21 mi.	Plans $10.00	$7,000 128,000

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Building Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JAMES E. TALLAMY
Supt. of Public Works

Bids: September 15, 1950 (949)

Housing Project

The Housing and Redevelopment Authority of the City of St. Paul, Minnesota, will receive bids for the construction including general, plumbing, heating, electrical, grading, and site improvement works of the John I. Mealtime Homes, PHA—Aided Low Rent Public Housing Project, Minnesota No. 1-1, consisting of 312 dwelling units and a community building, with street grading and paving, sidewalks, certain utilities and landscaping, until 2:00 P.M., C.S.T., on the fifteenth day of September, 1950, County Board Room, Third Floor, City Hall and Court House, St. Paul, Minnesota, at which time and place all bids will be publicly opened and read aloud.

Proposal forms, the contract documents, including plans and specifications, are on file at the following locations:

Housing and Redevelopment Authority
124 City Hall and Court House
St. Paul 2, Minnesota

Associated Architects and Engineers of St. Paul
116 Endicott Building
St. Paul 1, Minnesota

Any addenda to the plans or specifications, if issued, will be on file in the above offices at least 7 days before bids are opened. It shall be the bidder's responsibility to make inquiry as to addenda issued.

Copies of the documents may be obtained by depositing $40.00 with the Housing and Redevelopment Authority of the City of St. Paul, Minnesota, for each set of documents so obtained. Such deposit will be refunded to each depositor who returns the plans, specifications and documents in good condition, within 10 days after the bid opening upon the following basis: $10.00 for each of the first five sets, and $20.00 for each additional set.

A certified check or bank draft payable to the Housing and Redevelopment Authority of the City of St. Paul, Minnesota, U. S. Government bonds or satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to five percent of the bid shall be submitted with each bid.

The successful bidder will be required to furnish and pay for a satisfactory performance and payment bond.

Attention is called to the fact that not less than the minimum salaries and wages as set forth in the Specifications must be paid on this project.

OFFICIAL PROPOSALS

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of "State of New York, Commissioner of Taxation & Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Building Law, as set forth in "Instructions to Bidders". When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

JAMES E. TALLAMY
Supt. of Public Works

Bids: September 16, 1950 (923)

Interceptor Sewer

Sealed bids are invited by the Town of Fairfax, Virginia address to Robert E. Walker, Mayor, to be opened and read in public at 10:00 A.M. Daylight Saving Time, September 18th, 1950, for the construction of:

10,292 Lin. Ft. of 18" Interceptor Sewer.
4,210 Lin. Ft. of 15" Interceptor Sewer.
2,850 Lin. Ft. of 10" Interceptor Sewer.
4,337 Lin. Ft. of 8" Interceptor & Lateral Sewers.
1,302 Lin. Ft. of 8" C. I. Class 150 Force Main.
Complete Sewage Treatment Plant (0.50 MGD).
Remodeling & Re-equipping existing Sewage Pumping Station.
200 V. C. P. Concrete Block Manholes at an average of 50 Lin. Ft. Intervals.
Concrete Cradle required where depth of be built exceeds crushing strength of pipe.
Concrete Encasement required where sewer crosses under streams or highways.

The Bidder will be required to furnish a Bidders Bond in the each amount at 5% of the total bid for each of the sections on which he renders a bid.

On award of contract, the Bidder will be required to provide bond in the amount of 100% of the total contract price to guarantee the payment of all bills incurred on account of the work and the full performance of contract, also a maintenance bond for a 12 months period in the amount of one-half the construction cost.

On award of contract, the Bidder will be required to provide Public Liability and Property Damage Insurance.

Only bids on contractors registered in their respective state will be received.

The Town reserves the right to reject any and all bids.

A TWENTY DOLLAR ($20.00) check or money order for each, will be required for each set of contract documents which may be had by writing or wiring 47 Hundred Mason, Fairfax, Virginia. No refund will be made.

By authority of the Town Council at its regular meeting, on August 2nd, 1950.

SEARCHLIGHT SECTION

This index is published as a convenience to the readers. Every care is taken to make it accurate, but Searchlight Section assumes no responsibility for errors or omissions.

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SEARCHLIGHT SECTION

EMPLOYMENT • BUSINESS • OPPORTUNITIES • EQUIPMENT—USED or RESALE

UNDISPLAYED RATE:
(Not available for equipment advertising)
$1.20 cents a line, minimum 4 lines. To figure advance payment count 5 average words as a line.
INDIVIDUAL EMPLOYMENT WANTED undisplayed advertising rate is one-half of above rate, payable in advance.
PROPOSALS, $1.00 a line an insertion.

INFORMATION.
BOX NUMBERS care publication New York, Chicago or San Francisco offices count as 1 line additional in undisplayed ads.

DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:
The advertising rate is $11.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

NEW ADVERTISEMENTS received by August 25th at the New York Office 330 W. 42 St., N. Y. 18, will appear in Sept. 7th issue subject to space available.

THE AUSTIN COMPANY

Invites Applications From Capable Engineers and Draftsmen

Opportunities are being offered to Engineers and Draftsmen who can design and or prepare engineering drawings for industrial buildings and their facilities. Assignments are not for specific projects but are in our regular engineering staffs in long-established offices located on the East Coast, Central West, Gulf Coast, and West Coast. Good working conditions. Established vacation and sick leave plans, also paid holidays.

Positions are open to men possessing a sound background of education and experience and qualifying in—

DESIGNERS—Office buildings, laboratories, and industrial buildings. Positions require those possessing vision and creativeness.

STRUCTURAL—Industrial buildings and miscellaneous structures of steel and reinforced concrete.

MECHANICAL—Heating, air conditioning, ventilation systems, process piping, conveying systems, plumbing, sewer, and sprinkler systems.

ELECTRICAL—Industrial lighting and power distribution, and controls.

DETAILERS—Draftsmen experienced in the preparation of steel details for shop fabrication of industrial building frameworks.

Full particulars as to education, experience, and compensation desired should be given in first letter.

NATIONAL HEADQUARTERS

16112 Euclid Avenue — Cleveland 12, Ohio

ESTIMATOR or COST ENGINEER

wanted for work in Brazil Age 28 to 40. By North American Company which has been building hydro-electric projects in Brazil for past 50 years. First class engineering and construction organization with good opportunities for future. Salary to suit qualifications. In reply state experience and personal status in detail. Reply to

Dept. WHK
Canadian Brazilian Services, Ltd.
Yonge & Gerrard Sts.
Toronto, Ontario, Canada

ADDITIONAL EMPLOYMENT ADVERTISING
on the following page

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (18)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

WANTED, SEVERAL engineering graduates, under 35, by large industrial fire prevention organization for field work involving periodic inspections and special consulting service. Electrical and chemical engineers preferred. Permanent. Openings in United States and Canada. P-7281, Engineering News-Record.

CONSTRUCTION COMPANY, operating nationwide, specializing in structural concrete, such as bridge piers and their foundations and mass concrete such as dams, require A No. 1 thoroughly experienced estimator familiar with procedure, men capable of preparing comprehensive and complete estimates. To be considered, complete information must be furnished. Our organization has been advised of this advertisement. P-7274, Engineering News-Record.

DESIGNING ENGINEER experienced in steel and concrete bridges and structures. Must be capable of assuming responsibility. Salary and bonus. Submit complete data on education and experience. P-7291, Engineering News-Record.

(Continued on the following page)

ESTIMATORS

Fully experienced in construction and capable of estimating building work, mechanical (machinery, equipment, piping, etc.) or electrical installations. Degree in civil, mechanical or electrical engineering preferred but not necessary.

Openings in Cleveland Office offers lengthy employment with good salary for those qualifying.

Send complete resume stating experience, education, salary requirements and available date to:

THE H. K. FERGUSON COMPANY
Engineers and Builders
Ferguson Building, 1783 East 11th Street
Cleveland 14, Ohio

WANTED
PROJECT MANAGER

A large, long-established construction organization has an opening in its executive staff for a top-level Project Manager. This firm specializes in the heavy construction of dams, tunnels, bridges, etc. where the thorough knowledge of large-scale concrete, dirt, and rock operations is essential, and the person selected will have full management responsibility for the execution of these types of projects. Past experience must have demonstrated the ability to handle such positions on a cost-conscious, competitive basis. Therefore interested persons should forward detailed personal and experience records in order that fair evaluations may be made of their qualifications.

Interviews will be arranged for qualified applicants. All inquiries will be held strictly confidential and all replies will be acknowledged. Our key employees know of this ad. Salary open.

P-7559 Engineering News-Record
68 Post Street, San Francisco, Calif.

POSITIONS VACANT
(Continued from the preceding page)

ENGINEER, CIVIL experienced in drafting, quantity estimating, surveying and construction supervision. First class man only. Write 5910 MacArthur Blvd., Washington, D. C.

WANTED CONSTRUCTION Superintendent for reinforced concrete hospital construction in Eastern Pennsylvania. Give experience record, education, age, references and salary desired. P-7486, Engineering News-Record.

CONSTRUCTION PROJECT Manager—Experienced on large scale industrial and commercial construction and waterworks jobs. Write age, detailed account of experience and past 5 years. P-7495, Engineering News-Record.

ELECTRICAL POWER Plant Designer—Draftsman wanted. Experience in electrical control design and planning desirable. Location St. Louis, Mo., States. P-7488, Engineering News-Record.

OFFICE MAN—Good draftsmen, some field work necessary. Prefer graduate with 2 years experience interested in sanitary and water supply engineering. Location Philadelphia, Pa. P-7502, Engineering News-Record.

WANTED: HIGH Class Draftsmen structural and industrial. Also experienced structural designers in steel or reinforced concrete. Also concrete detailers. Sverdrup & Parcel, 141 Park Avenue, New York, N. Y.

STRUCTURAL DESIGNER thoroughly familiar with steel and concrete building construction. Permanent position in Southwestern Area. Give full particulars regarding experience, salary requirements, etc. P-7519, Engineering News-Record.

STRUCTURAL STEEL Detail Draftsmen and Checkers. Must be experienced. Mr. Sylvan Stein, Complete Station Planning Division, Sanborn, Stoketer and Associates, 1214 Cherry St., Toledo 2, Ohio.

ENGINEER EXPERIENCED building construction installations, mechanical equipment and estimating. Permanent position, long established firm. Steel and concrete. P-7553, Engineering News-Record.

SUPERINTENDENT BUILDING—Construction. Experienced Public, Commercial and Industrial Construction. State connections, age, salary and reference. Location open. P-7547, Engineering News-Record.

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Wanted — Experienced Construction Engineer for large turbo-generator power plant on East Coast. Must have recent experience in directing operations for complete project, with knowledge of sub-aqueous operations and construction of docks and waterfront facilities. Write giving full particulars of education, experience and salary expected.

P-7108, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

ELECTRICAL ENGINEERS

Graduates, experienced in design engineering and economic studies of steam-electric power plants and high voltage substations. Also, knowledge of power system relaying and preparation of specifications for switchboards and switchgear.

P-7541, Engineering News-Record
330 W. 42nd St., New York 18, N. Y.

POSITIONS WANTED

CONSTRUCTION MANAGER. Project Manager. Graduate C.E., P.E., with 20 years experience in all phases of construction work, estimating, purchasing, field supervision. Broad experience on Heavy, General Building and Industrial Plant Construction. Excellent record and references. Permanent connection desired. Available Oct. 1st. Salary $12,000. PW-7521, Engineering News-Record.

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DRAFTSMAN, GRAD Ind. Management, 2½ yrs. drafting exp. Mech. Struct. Resid. Can be located in South. Wants responsible outdoor position. References. PW-7525, Engineering News-Record.

SALES ENGINEER—Graduate Civil Engineer, Veteran, married, 3 years experience in consulting structural engineering and sales. PW-7518, Engineering News-Record.

(Continued on the opposite page)

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PW-7540, Engineering News-Record
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Because of the Labor Day Holiday, September 4th, the "Searchlight" pages of the

September 7th Issue of ENGINEERING NEWS-RECORD

close for press earlier than the usual weekly closing time.

The cooperation of advertisers is solicited in forwarding new copy or changes of copy to reach us promptly.

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Display and Undisplayed Ads
Friday, August 25th
PROPOSALS
Thursday, August 31st

(Continued from the opposite page)

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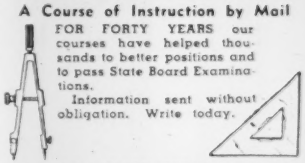

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On September 18, 1950 at 3 o'clock P.M. D.S.T., at the Village Hall, South Orange, N. J., the purchasing agent of the Village of South Orange will offer for sale two (2) Ingersoll Rand Air Compressors, as follows:

Compressor No. 1
(74748-74749)

Compressor No. 2
(74746-74747)

Name of manufacturer ..... Ingersoll-Rand Co.
Type "Imperial" type XHE 2 compressor having compound, two stage air cylinders, direct connected to a 100 H.P. synchronous motor, unity power factor, 60 degree, 3 phase, 440 volt, 60 cycle, with exciter. Including start-ite panel.
277 revolutions per minute.
490 cu. ft. piston displacement.
410 cu. ft. air delivered per minute.
83 rated horsepower.
Size of cylinders 9 x 10 and 14 x 10.
100 lbs. per sq. in. discharge pressure.
Year purchased and installed now 1927
Condition ..... Compressor cylinders, intercooler, synchronous motor, starting panels, and exciter in operating condition.

The air compressors will be open to inspection at the main Pumping Station at Walsh Avenue, South Orange, until the time of receiving bids. Failure on the part of the prospective purchaser to make inspection will not be considered as grounds for any claim or adjustment.

The compressors will be sold "as is" and "where is" without warranty or guaranty that the same are in any condition or fit to be used for the purpose for which they were intended, and no claims for allowance upon any of the grounds aforesaid will be considered after the bids have been opened and accepted.

Bids will be accepted and considered for either one or both compressors.

Each bid must be submitted in writing and accompanied by cash or a certified check in the sum of not less than 25% of the total amount of the bid and made payable to The Village of South Orange, N. J. Payment of the balance must be made after a contract of sale has been awarded.

The compressors will be dismantled and placed outside the pumping station building under tarpaulin cover by the Village. The successful purchaser shall furnish all necessary labor, equipment, etc., for removing the compressors from outside the building at his own cost and expense.

The board of Trustees reserves the right to award a contract of sale for either one or both compressors and further reserves the right to reject any or all bids.

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CAT D-7 w canopy top & hydraulic bulldozer
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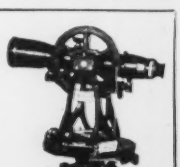

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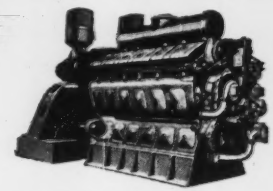

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625	Alco	6-12¼x13T	750	600	125	General Motors	3-268A	150	1200
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210 CFM WORTHINGTON (Gas & Diesel) 4 Pneu
315 CFM LeROI (Gas) 4 Pneu
315 CFM INGERSOLL (Diesel) 4 Pneu
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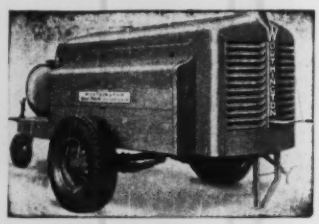

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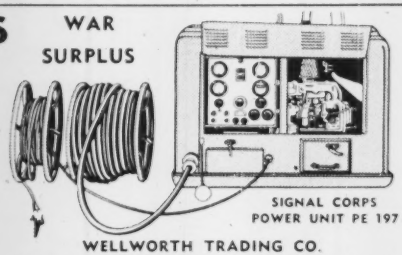

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NEW PRODUCTS

New Earth-Moving Machines Feature High Capacity and High Speed

Two new rubber-tired earth-moving machines have just been announced by Caterpillar. They are: a 4-wheel diesel tractor-wagon combination (composed of a DW20 tractor and W20 wagon); and a 2-wheel diesel prime mover (DW21) equipped with a No. 21 scraper. The DW20 will also be available with a No. 20 scraper and a No. 20S bulldozer. Both the DW20 and DW21 are powered by a 6-cyl Caterpillar diesel rated 275 hp at 2,000 rpm. The DW20 has five forward speeds (2.88 to 26.60 mph), and a reverse speed of 3.72 mph. Working speeds are controlled by a foot throttle. Overall length of tractor and wagon is 45 ft 8 in.; height is 10 ft 2 in. The W20 has a struck capacity of 17.0 yds; heaped of 25 yd. Doors are hydraulically controlled with a positive mechanical lock. The cable-controlled No. 20 scraper has a struck capacity of 15 yds; heaped of 19½ yd. Width for a non-stop turn of the tractor-wagon is 50 ft. The DW21 has five forward speeds (2.16 to 20.0 mph), a reverse speed of 2.79. Overall length of tractor-scraper combination is 40 ft 7 in., width is 11 ft 6 in., height is 10 ft 7 in. Positive hydraulic follow-up steering, 90 deg each way, is provided which permits a non-stop turn with scraper in 35 ft. The No. 21 scraper has a struck capacity of 15 yd; heaped of 19½ yd. Depth of cut is 9 ft 6 in. Struck capacity may be increased to 18 yd by using 12-in. sideboards. Approximate shipping weight of the combination is 47,500 lb. Both tractors are equipped with spring-mounted bucket-type seats that have upholstered cushions and backs. They are adjustable forward and back and have hydraulic snubbers. These new Caterpillar units offer the heavy construction contractor a complete equipment package specifically designed to meet his needs in each zone of operation.—Caterpillar Tractor Co., Peoria 8, Ill.

End-Discharge Tilting Mixer

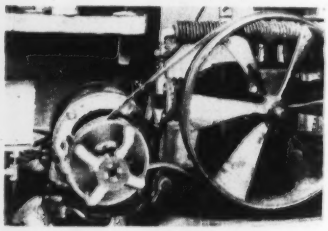
Lightweight 3½-S end-discharge tilting mixer weighs less than 800 lb. Loading height is 48 in. Mixing drum makes a complete revolution so that quick, thorough drainage of bowl can be accomplished after washing out. Mixer can be mounted on steel or pneumatic-tired wheels. Power is provided by a 2.5-hp Wisconsin engine. —Worthington Pump & Machinery Corp., Ransome Construction Equipment Sales Div., Dunellen, N. J.

Engine-Oil Changer

Vacuum-type engine oil changer completes oil changes in approximately 3 min. Vacuum is supplied by connection to the engine intake manifold. Oil is drawn out through a quick-coupling nozzle inserted in dip stick opening. Engine is stopped by safety switch when drainage is completed.—The Electric Heat Control Co., 9123 Inman Ave., Cleveland 5, Ohio.

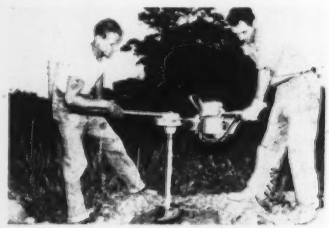
Wire-Rope Splicing Machine

Cable-slicing machine speeds opening of strands in wire rope, and the tightening of loose end strands during splicing. The Model 9 splicer is designed for ½ and 1-in. rope, but can be used with ¾-in. rope. A second pair of jaws increases capacity to 1¼ in. The Model 1 splicer covers the ⅛ to ⅝ in. range.—Quay Industries, 910 Seventeenth St., N. W., Washington 6, D. C.



Variable-Speed Clutch Pulley

Variable-speed clutch pulley is automatically controlled by engine speed, and makes possible infinite gear-ratio changes. The automatic clutch is centrifugally operated. Clutch allows for independent action of pulley belt by an intermediate ball bearing. During acceleration, pulley belt is picked up by the pulley with no wear on the belt.—The Driv-Way Life Co., P. O. Box 2850, Denver, Colo.



Post-Hole Digger

Gasoline-powered post-hole digger can be quickly converted into a standard chain saw. Weight of the two-man drill, complete with 6-in. auger, is 79 lb. Full-swivel coupling permits auger to drill at any desired angle, and to reverse rotation, if desired. A cen-

(Continued on page 86)

GOW SOIL BORINGS

BY Raymond

Carefully made soil investigations are of great value to Owners, Architects and Engineers in the selection of building sites and the determination of proper structural foundations.

Specify dependable Gow borings by Raymond and you will secure information that will supply the basis for sound engineering decisions.

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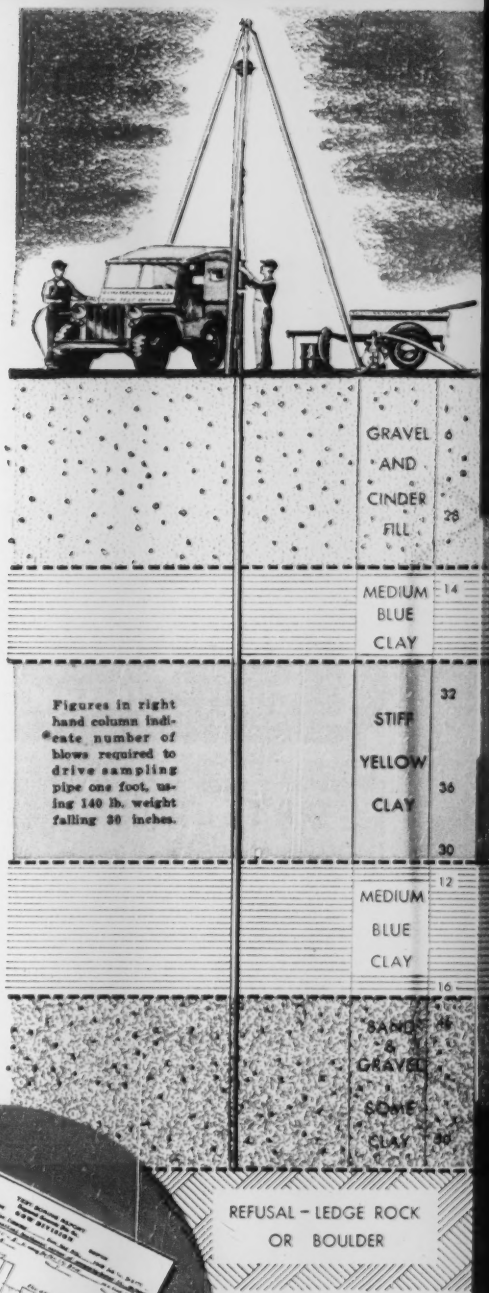

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The soil around Allentown, Pennsylvania, is largely limestone. One night, a passing automobile's vibration caused an entire street intersection to cave in over an unsuspected cavity. Gas mains exploded and water lines ruptured. The surge of water from the broken mains ate dangerously into the surrounding soil! Nearby structures were in danger of collapsing. As soon as practicable, one of our crews began the application of reinforced GUNITE over exposed rock surfaces (see photo above) to prevent air slacking and further undermining of the surrounding area. Our knowledge of how to cope with this situation was gained through actual experience in the construction of water tunnels in New York City, Baltimore, Boston, Toronto, as well as in many coal mines.

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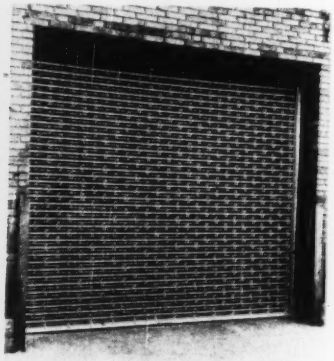
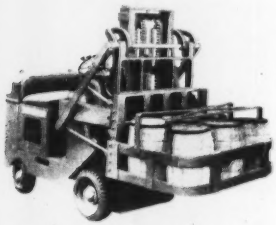
trifugal clutch automatically disengages the auger at idling speeds. Augers of 6, 9, and 12-in. dia. are available.—McCULLOCH MOTORS CORP., DEPT. MF, 6101 W. CENTURY BLVD., LOS ANGELES 45, CALIF.



Open-Grill Metal Door

Grillwork of Mecco door shuts out traffic without disturbing air flow or cutting off light and vision. Grilles are available with manual chain-and-gear hand crank, or for motor operation. Guides may be concealed. Available in sizes to meet various specifications. — MOESCHL-EDWARDS CORRUGATING CO., COVINGTON, KY.



Keg-Handling Device

Materials handler picks up, transports, stacks, and unloads (without a pallet) six 200-lb kegs of spikes in a single maneuver. As guide frame is lowered over kegs, the unloader is retracted pulling kegs firmly against three rubber-covered shoes which project from the face of the carriage. Shoes and guide frame are detachable, permitting use of Model LT-44 Towmotor lift truck with standard forks.—TOWMOTOR CORP., 1226 E. 152ND ST., CLEVELAND 10, OHIO.

Heavy-Duty Exhaust Mufflers

Advantages claimed for the Donaldson exhaust mufflers are that they reduce smoke and fumes, lessen valve pounding, improve volumetric efficiency of engines, decrease fuel consumption, lower muffler jacket temperatures, and reduce cab panel drumming and vibration. Two types

(Continued on page 88)

here's service in TUBE-TURN

WELDING FITTINGS AND FLANGES

A distributor nearby carries a large stock of genuine TUBE-TURN welding fittings and flanges . . . in a wide range of types and sizes . . . to assure you prompt delivery for all your needs. Their experienced piping men will gladly help you in your piping problems...Call them for this complete service!

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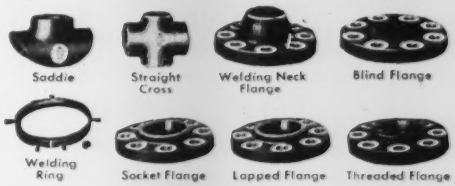

TUBE-TURN SEAMLESS WELDING FITTINGS—RANGE OF SIZES

Description	Standard Weight	Extra Strong	Schedule 160	Double Extra Strong	Light Gauge	
					Nominal Pipe Size	Iron Pipe Size
ELBOWS 90° Long Radius	½"-30"	½"-30"	1"-12"	¾"-8"	4"-24"	¾"-12"
90° Long Tangent	1½"-12"	1½"-12"	....	....	....	....
90° Reducing	2x¾", 6x2½"	2x¾", 6x2½"	....	....	....	....
90° Short Radius	1"-30"	1½"-30"	....	....	....	....
45° Long Radius	½"-30"	½"-30"	1"-12"	¾"-8"	4"-24"	¾"-12"
RETURNS 180° Long Radius	½"-30"	½"-30"	1"-12"	2"-8"	4"-24"	¾"-12"
180° Short Radius	1"-30"	1½"-30"	....	....	....	....
180° Ex. Long Radius	1"-2½"	1"-2½"	....	....	....	....
TEES—Straight	½"-24"	½"-24"	½"-12"	½"-8"	....	....
Reducing Outlet	½"-24"	½"-24"	¾"-12"	¾"-8"	....	....
REDUCERS Concentric & Eccentric	¾"x¾"-24"x16"	¾"x¾"-24"x16"	¾"x¾"-12"x5"	¾"x½"-8"x3½"	....	....
CAPS	¾"-24"	¾"-24"	1"-12"	1"-8"	....	....
STUB ENDS—Lap Joint	½"-24"	½"-24"				
SADDLES	2"-24"*					
LATERALS—Straight	1"-24"	1"-24"				
Reducing	1"-24"	1"-24"				
CROSSES—Straight	¾"-24"	¾"-24"				
Reducing	¾"-24"	¾"-24"				
RINGS—Groove Type	¾"-24"	1"-24"				
Ridge Type	¾"-12"	¾"-12"				
SLEEVES—Welding	2"-24"*					

Also available in certain sizes are: 90° long and short radius elbows, 45° long radius elbows and 180° long and short radius returns in Schedules 30, 40, 60 and 80, and 45°, 90° and 180° Super elbows and returns in Standard Weight and Extra Strong.

Tube-Turn welding fittings and flanges conform to applicable ASA and ASTM Standards.

*Since saddles and sleeves are used for external reinforcement only, they do not conform to iron pipe size thicknesses.

TUBE-TURN FORGED STEEL FLANGES—RANGE OF SIZES

	150 Lb.	300 Lb.	400 Lb.	600 Lb.	900 Lb.	1500 Lb.	2500 Lb.
WELDING NECK	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
SLIP-ON	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
LAP JOINT	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
THREADED	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-12"	½"-12"
BLIND	½"-24"	½"-24"	½"-24†	½"-24"	½"-24"	½"-24"	½"-12"
SOCKET TYPE	¼"-24"	¼"-4"		¼"-3½"			
REDUCING Threaded or slip-on	¾"-24"	¾"-24"	¾"-24†	¾"-24"	¾"-24"	¾"-24"	¾"-12"
ORIFICE—threaded		1"-24"	4"-12"	1"-12"	3"-12"	1"-12"	
ORIFICE—slip-on		1"-24"					
ORIFICE—welding neck		1"-24"	4-12"	1"-12"	3"-12"	1"-12"	

†Dimensions on sizes thru 3½" same as for 600 lb. flanges.
*Dimensions on sizes thru 2½" same as for 1500 lb. flanges.

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Manufacturers of a complete line of welding fittings and flanges

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The USF all-steel Utility Building is your economical answer to either a portable or permanent structure at lowest cost. Frames are prefabricated and pre-fit formed steel that simply bolt together. Box corrugated steel roofing and siding sheets attach with clip-and-wedge fasteners. No special tools are needed, no field punching, welding or riveting. Manual erection is generally possible on all but long span trusses. Suitable for permanent use or readily dismantled and transported.

Sizes range from 10′ x 12′ floor plans to either 26′ or 30′ span widths in 10′ and 12′ clear heights for erection in multiple lengths of 13′-4″. Full range of doors, fenestration, etc.

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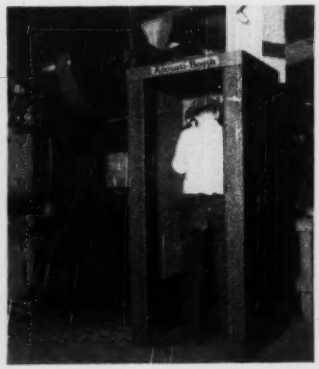
are available—a vertical cab-mount, and an oval type for under-chassis installation. Both are designed for gasoline and diesel engines in the 150 to 300-hp range.—DONALDSON CO., INC., ST. PAUL, MINN.



Sound-Absorbing 'Phone Booth

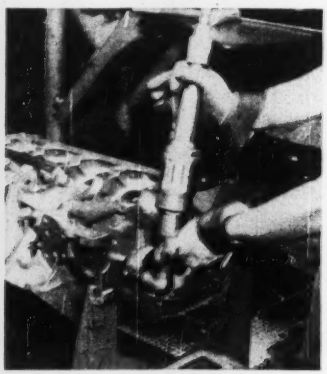
Doorless and sound-proofed Acousti-Booth is said to permit conversation without raising the voice, even in the noisiest spots. Recommended for use on construction jobs, the booths are available in two models—one is full-length; the other is a waist-high model. —BURGESS-MANNING CO., LIBERTYVILLE, ILL.

Centrifugal Pumps

Design of the Motor-Mount centrifugal pumps permits use with any motor having an NEMA Type-C mounting flange. They are made in vertical and horizontal types, each type made in 25 standard sizes. Specifications are: capacities to 200 gpm; heads to 165 ft; motors, ¼ to 7½ hp; speeds 1,750 and 3,500 rpm; maximum total pressure, 125 lb; maximum suction pressure, 50 lb; top liquid temperature, 200 deg. F.—THE DEMING CO., SALEM, OHIO.

Lightweight Respirator Hood

Model 75 respirator hood provides protection against dust and paint-spray operations. It contains the R2000 respirator which uses seven types of cartridges for protection against a variety of dusts or gases. Hood design provides full and free movement of head and neck.—AMERICAN OPTICAL CO., SOUTHBRIDGE, MASS.

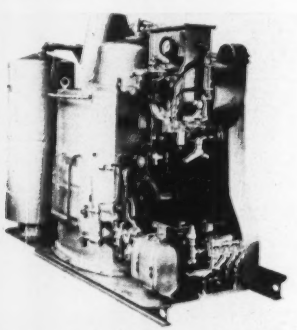


Angle-Type Nut Setter

High torque for setting medium-sized nuts is provided by the Keller angle-type nut setters. Small, compact angle attachments adapt the tools to fast work in close quarters. Tools are available with torques of 20, 30, 40, 60, and 70 ft-lb.—KELLER TOOL CO., GRAND HAVEN, MICH.

Automatic Pump Control

Pressureflo device automatically controls pump operation when handling water, sewage, or other liquids. It consists of a flow-determining means, a pressure or level-sensing device, and a mechanism serving as the control function. The Pressureflo control may be used to start and stop pumps, to increase or decrease the speed of one or more pumps, to maintain a predetermined pressure at any point, or to automatically adjust pressure and flow. —BUILDERS-PROVIDENCE, INC., 345 HARRIS AVE., PROVIDENCE 1, R. I.



Steam Generator

Vapor steam generator supplies large quantities of high-pressure steam

(Continued on page 90)

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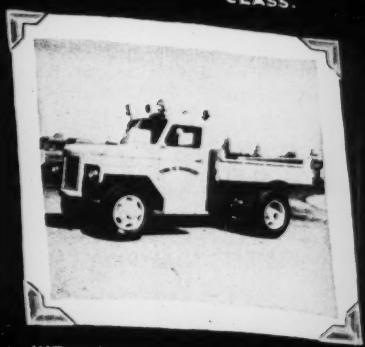
THESE MEDIUM-HEAVIES WIN BLUE RIBBONS IN THE 28,000 TO 34,000 GVW CLASS. MODELS YU--ZU--SU

OUR BIGGEST 4X4 BRUTES WEIGH IN AT 40,000 TO 44,000 GVW MODELS M-7 AND M-10



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This line-up in our album covers the big FWD family of *basic* models. You should see the *other* pages... picture-after-picture of both highly specialized and conventional applications... plus photo-proof of economy, safety and spectacular performance... both on and off the highway. Put the *extra-traction* and *proper weight distribution* of this family of bread-winners to work for you, too! See your FWD distributor or write FWD.

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Because it combines light weight, with ample strength and high corrosion-resistance, Hendrick Mitco Aluminum Grating is especially desirable for many purposes.

It is being successfully used in such widely different applications as ship-board installations and in sewage disposal plants.

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Saxe Units place in position and securely hold together structural parts to be welded.

As used in many welded structures they *eliminate all hole punching*, producing an economical, rigid, safe and quickly erected structural frame.

Write for 58 pg. Manual containing full engineering design information for welded structures

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Foundation Testing for Bridges, Dams and All Heavy Structures

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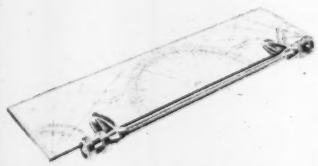
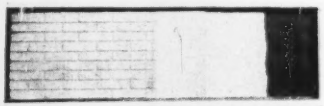
for short or sustained periods for pile-driving, asphalt plants, and similar uses. It develops 200 lb working-steam-pressure in two minutes from cold water and makes over 3,500 lb of steam an hour at 75 to 300-lb steam pressure, the manufacturer states. Once started, automatic controls turn the machine off when predetermined pressure is reached; start it again when pressure drops 15 lb. Power is supplied by a 5-hp motor or gas engine. Over-all dimensions are: 8 ft long, 4 ft wide, and 6½ ft high.—VAPOR HEATING CORP., 80 E. JACKSON BLVD., CHICAGO 4, ILL.



Universal Drafting Tool

Plastic drafting device serves as a straight-edge, T-square, triangle (all angles), protractor, parallel rule, and lettering guide. The instrument is self-contained and requires no attachments or board clamps. Feature of the instrument is the precision-ground roller which causes it to always roll in a straight line.—LOOMIS INDUSTRIES, 516 PARK WAY, PIEDMONT 11, CALIF.



Building Coating Material

Dura-Brick coating is recommended for new home construction or for remodeling. It provides a brick-like surface and is highly weather resistant. Application consists of three layers of the mixture applied over a covering of 15-lb rag felt base. The third coat, colored as desired is combed to simulate brick texture and is then lined off by a special knife so that the white undercoat shows through as mortar joints.—WISCONSIN DURA-BRICK CO., 4709 W. CENTER ST., MILWAUKEE 10, WIS.

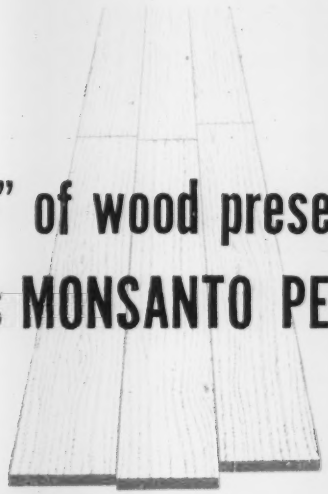
Hydraulic Pump-Valve Unit

Pumps in the B-101 series are designed for use in actuating dump units. They are recommended for intermittent use with operating pressures up to 1,500 psi. The B-101 is made in three sizes (1¼, 2, and 2¾ in.) and can be furnished without relief valve or with single or two-stage relief valve. Valve has raise, hold, and lower posi-

(Continued on page 93)

for "tough job" of wood preserving, utility chooses MONSANTO PENTAchlorophenol

(Santophen 20)



MONSANTO PENTA protects planks which protect workmen and cables at this Union Electric Company of Missouri substation, near St. Louis.

There was a "tough job" for a wood preservative when Union Electric Company of Missouri built safety for workmen and protection for cables into its new substation at St. Louis. To accomplish this built-in protection, underground conduits were covered with heavy planks so that future workmen would not pierce cables accidentally. Obviously, to give *long-lasting* protection, the planks had to be treated with a *long-lasting* preservative. Monsanto PENTAchlorophenol was applied by pressure process at the rate of 10 pounds per cubic foot of wood.

Monsanto PENTA is a *chemically uniform* material. It *stays* in the wood . . . does not evaporate . . . isn't washed away by rain or ground water. Monsanto PENTA gives *positive protection* against termites and other wood-destroying insects . . . against rot organisms. With properly formulated PENTA treatment, wood can be painted or stained. It can be made water repellent.

If you use wood in any application in which long life of the material is desired, it will be worth your while to investigate Monsanto PENTA. For information, mail the coupon or contact the nearest Monsanto Sales Office. MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 1759-H South Second Street, St. Louis 4, Missouri.

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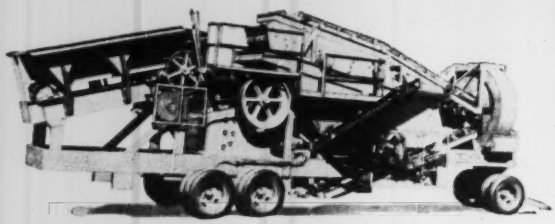

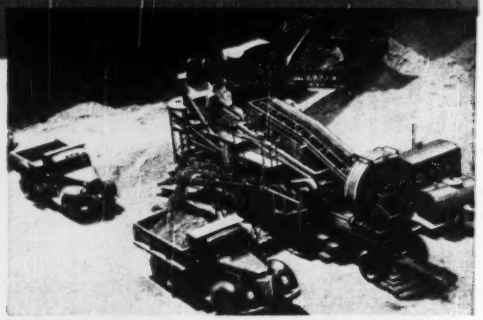

1 TwinDual Pacemaker Rock Plant

2 TwinDual Gravel King — three stages of crushing, two screens for pits with large boulders

3 TwinDual Master Gravel Plant—double the output of conventional two-stage plants of comparable size and weight

4 TwinDual Secondary with 546P Primary. High capacity with two portable units for quarry operation

UNIVERSAL'S TwinDual Plants for Rock and Gravel

Out in front! Universal TwinDual Plants are breaking production records and cutting costs per ton on finished aggregate.

Universal "Stream-Flo" engineering does it with the TwinDual Method — the modern system of crushing and screening that gives three full stages of reduction with only two crushers. You get more production, less jaw and roll shell wear, longer life, less maintenance.

Before you make an investment in a crushing, screening and loading plant for rock or gravel investigate the profitable bonus you get with a TwinDual installation. Compare TwinDual Plants with the field. Get the facts now.

How many crushers do you need for 3 full stages of reduction?

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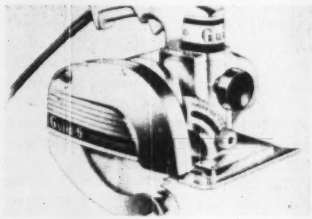
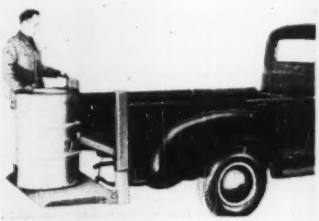
tions. Two drive shafts provide connections to power-take-off shafts having either rotation.—The Commercial Shearing & Stamping Co., Youngstown, Ohio.



Powered Hand Saws

Improved Guild saws (Models A-6 and A-8) feature: Built-in calibrated angle-adjustment which permits accurate bevel cutting; and an instant depth control. The A-6 cuts a full 2 in. at 90 deg; the A-8 cuts 7⅞ in. at 90 deg. Fan ventilating system keeps motor cool and the cutting line clear. Both saws are powered by 115-v ac dc motors.—Porter-Cable Machine Co., 250-a N. Salina St., Syracuse 8, N. Y.



Hydraulic Tailgate Loader

Hydraulically powered tailgate loader for pickup trucks has a 1,000-lb capacity. Power is provided by a fan-belt-driven pump with its own self-contained clutch. Pump operates only when lifting power is needed. One control is used for raising, holding, or lowering. Safety by-pass valve prevents overloading the hydraulic system.—National Lift Co., Subs. Gar Wood Industries, Inc., Dept. 2039, 225 Madison St., Waukesha, Wis.

Spring-Making Machine

Drill-press attachment permits shop fabrication of springs of all types. These can be made with infinite variations in pitch, length, and size (within its range). Capacities include wire from 6 to 28 gage. Outside diameter of finished springs can be varied from ⅛ to ⅝ in. Special spindles are available for other sizes.—Cycloid Corp., 12 Newhall Ave., Saugus, Mass.

Gas, Diesel Engines

Design of three new engines permits their use with natural gas, butane, or diesel oil as fuel. They are built in three basic sizes having ratings of 22, 33, and 45 hp. These ratings are approximately the same regardless of fuel used. Applications of all three may be widely varied by use of accessory equipment.—Waukesha Motor Co., Waukesha, Wis.

Lightweight Aluminum Ladder

Dual-purpose aluminum ladder can be used as a 10-ft straight unit, or as a 6-ft step ladder. It weighs 15½ lb, and safely supports 600 lb. Non-skid pads are mounted on the flared rails to prevent slipping.—Original Products Co., P. O. Box 9155, Fort Worth 7, Texas.

Tube-Fastening Staple

Tube-Tite staple is designed for fastening copper or brass tubing used in radiant heating, and in hot and cold water service-line installation. Staples are copper with a steel core for strength. Sizes fit ⅜, ½, or ¾-in. nominal tubing. Flat-top staples fit the first two sizes; a round-wire top fits the ¾ in.—E. H. Titchener & Co., 67 Clinton St., Binghamton, N. Y.

New Product Briefs

Welding products announced by The Lincoln Electric Co., Cleveland 1, Ohio, include a new welding cable, an insulated electrode holder, and a mild-steel E6012 electrode (Fleetweld 72). The cable features long life and maximum flexibility. The holder combines the advantages of both tong and hole-type holders. The electrode is recommended for high-speed production of single-pass fillet and lap welds in the flat or horizontal positions.

Grille for ventilating or air-conditioning systems imparts a turbulent action which minimizes drafts and produces rapid temperature equalization. Manufactured by: Barber-Colman Co., Rockford, Ill.

Tuf-Cote coating for safety lenses is now distributed by the Bausch & Lomb Optical Co., Rochester 2, N. Y. Tuf-Cote makes lenses more resistant to welding splatter and emery pitting.

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FOR LONG LASTING, HEAVY DUTY
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INDUSTRIAL FLOORS
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LOCOMOTIVE CRANES
GASOLINE • DIESEL
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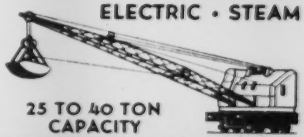

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Manufacturers' Publications

Calcium Chloride for Roads—Interesting new booklet is entitled, "The Why of Wyandotte Calcium Chloride for Roads". It is primarily directed at state and county highway commissioners and engineers, township supervisors, and others concerned with good gravel roads. Questions such as gravel loss, blading costs, spring breakup, and stable bases for future surfacing are aptly discussed. This booklet also discusses circumstances where calcium chloride will not work.—WYANDOTTE CHEMICAL CORP., CALCIUM CHLORIDE DEPT. (ENR), MICHIGAN ALKALI DIV., WYANDOTTE, MICH.

Movie on Blasting—"Before the Blast" is a specialized safety film produced to aid in reduction of accidents and injuries in the construction industry. The film outlines numerous safety rules and suggestions, concerning storage, transportation, and use of high explosives. Running time of this 16-mm color-sound movie is 10 min.—AFFILIATED AETNA LIFE COMPANIES, PUBLIC EDUCATION DEPT. HARTFORD 15, CONN.

Clear Wood Preservative—Decaznot, a clear wood preservative, is featured in Catalog 501-WP. Also included in this catalog is information on C-4 black creosote; Coopersote brown creosote oil; Puresote, a light-brown extra-quality creosote; clear creosote shingle stain; black tree wound paint; and Exterm termite destroyer. The bulletin describes each product, lists its recommended uses, and describes methods of application.—COOPERS CREEK CHEMICAL CORP., WEST CONSHOHOCKEN, PA.

Concrete River Weights—Illustrated brochures describe the Universal concrete river weights. The first publication shows photos of actual use of weights to safeguard gas lines crossing the Tennessee river. Engineering specifications are listed. The second publication, a 12-p booklet, shows how precast concrete cribbing and bridge deck slabs combine to speed bridge construction and repair.—UNIVERSAL CONCRETE PIPE CO., 297 S. HIGH ST., COLUMBUS, OHIO.

Woven-Wire Slings—Specifications for a complete line of woven-wire slings are listed in this catalog. Slings listed are available in standard widths from 3 to 30 in. and from 36 to 132 in. in standard lengths. The catalog points

out that special sizes are fabricated on request, and lists the various metals and alloys in which the slings are produced.—THE CAMBRIDGE WIRE CLOTH CO., CAMBRIDGE, MD.

Plastic Pipe—Literature describes outstanding features of plastic pipe including light weight and extreme flexibility. This type of pipe can be used for almost any purpose and is guaranteed against rot, rust, and electrolytic action. Data available describe typical uses and methods of handling plastic pipe.—CARLON PRODUCTS CORP., 10153 MEECH AVE., CLEVELAND 5, OHIO.

Rubber Products—Three new bulletins describe Hewitt-Rubber products. Bulletin 137 describes the Servall all-service hose for handling air, water, gasoline, oil, or mild chemicals for low-pressure spray requirements. Bulletin 129 describes the general-service Conservo air hose. Bulletin H-1 (8 pp) describes applications and comparative qualities of flexible rubber pipe.—HEWITT-ROBINS, INC., HEWITT-RUBBER DIV., 240 KENSINGTON AVE., BUFFALO 5, N. Y.

Tungsten-Carbide Bits—Picture story presented in 20-p catalog shows how to successfully recondition tungsten-carbide bits. The booklet also contains helpful operating suggestions for drillers on how to obtain maximum speed and footage out of carbide bits.—ROCK BIT SALES & SERVICE CO., 2514 E. CUMBERLAND ST., PHILADELPHIA 25, PA.

Repair of Tractor Parts—Repair and rebuilding of worn tractor parts by welding are described in an informative folder. This folder explains the use of Manganal 11 to 13½% manganal-nickel steel products. This product is recommended for use on drive sprockets, idler wheels, track rollers, tractor grousers, and bulldozers. Manganal has a tensile strength up to 150,000 psi.—STULTZ-SICKLES CO., 134 LAFAYETTE ST., NEWARK 5, N. J.

Forming System—Booklet (8 pp) describes and illustrates latest development in Symons concrete-forming system. This consists of brace plates which can be furnished for use on 2x4 braces and later used as horizontal supports on scaffolds. Another innovation is a panel with steel cross members which is recommended to take care of heavy pouring, especially when a vibrator is used. Each of these and other features are described in this comprehensive booklet.—SYMONS CLAMP & MFG. CO., 4265 W. DIVERSEY AVE., CHICAGO 39, ILL.

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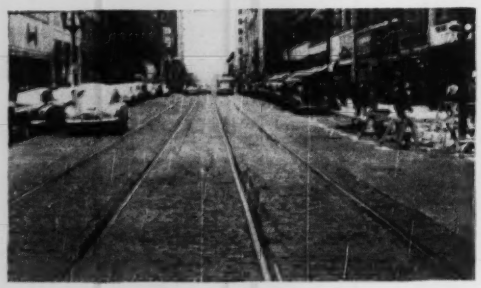
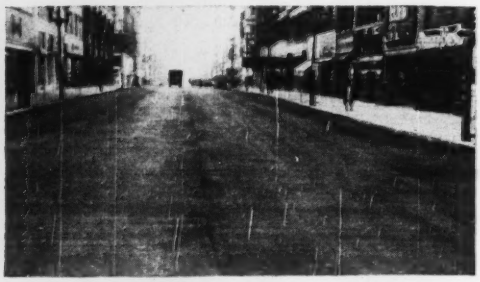
Letter from **KANSAS CITY**





Busy Walnut Street was resurfaced on Sunday: five-blocks in 11 hours. Before, (left) and after, (right) views show quite a change.

Three things are pointed to with pride today by civic leaders and the man on the sidewalk in Kansas City, Mo. They are:

1. The centennial celebration of the founding of that sprawling metropolis, incorporated in 1850 as the Town of Kansas, changed to the City of Kansas and subsequently to Kansas City.

2. Its million-dollar street-resurfacing program.

3. Its street-lighting system, completely modernized and well along toward completion.

From an engineering standpoint, the centennial meant plenty of work. Streets had to be gotten in shape to handle large volumes of traffic, and every available parking space had to be made ready.

• Big street-surfacing program—Taking advantage of an "open" spring, City Engineer John Maring launched his street rehabilitation and resurfacing program March 13. He completed over 10 mi of heavily-traveled, downtown streets by June 1, at a cost of $300,000—all by contract. The remaining 25 mi of the $1,000,000 resurfacing program will be finished by Sept. 1.

This rapid-fire resurfacing program, in turn, produced plenty of headaches for the traffic department, according to Tom Seburn, traffic engineer. Biggest job was to keep traffic moving.

Traffic interference was virtually eliminated, however, on one project by doing the job on Sunday, May 21. On that date, three local contractors—Midwest Precote Co., Matt Bowen Construction Co., and the Reno Construction Co.—teamed up to resurface 5 mi of 45-ft wide Walnut Street between 8th and 13th streets. The job took 1,600 tons of asphaltic concrete and 11 hours to complete.

• Streets are brighter—Many centennial visitors found Kansas City's streets brighter than their own main streets. Relighting of all main traffic arteries will be completed this year: 144 mi of streets now have the latest in lighting, and 37 mi are under various stages of construction. Modernization of residential street-lighting stands at 97 mi completed, 72 mi under construction, the remaining 500 mi to be modernized during the next three years.

In addition to engineering problems linked with the centennial celebration, City Manager L. P. Cookingham and Public Works Director Reed McKinley have their share of worries not infrequently found in big city management. The greatest of these, until this year at least, has been deferred improvements due to lack of money.

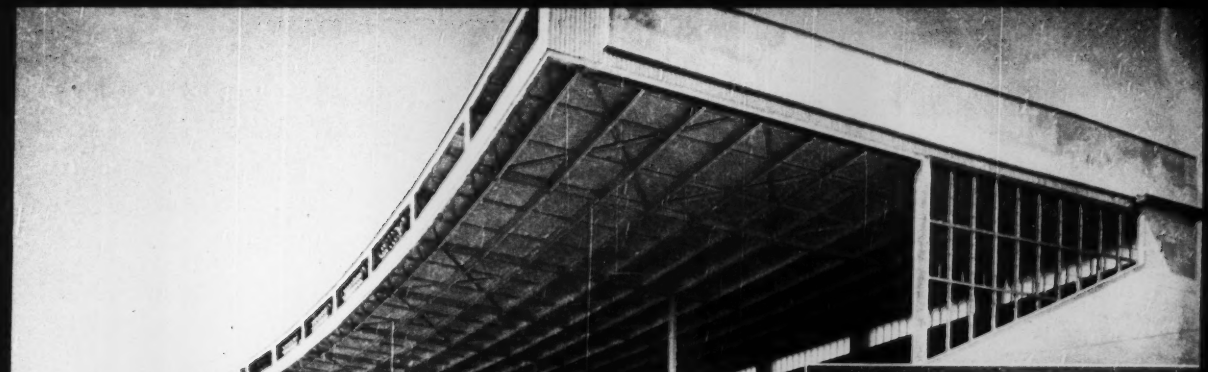
Although a $41,500,000 bond issue for public works improvements was approved by voters in 1947, it was held up by a two-year court fight over its constitutionality. Following a recent favorable decision by the State Supreme Court, the city sold two bond issues totaling $10,500,000 for this year's construction program.

Major items in this program, in addition to the street resurfacing, include: $1,300,000 for completion of the Southwest Trafficway; $1,230,000 for the city's share of right-of-way on the Sixth Street Expressway; $1,600,000 for a new 7,000 x 200-ft runway, and other improvements at the municipal airport; $500,000 for street-widening to eliminate some bad bottlenecks; $500,000 for parks and playgrounds; a big sanitary sewer extension and two big storm relief sewers, totaling $500,000; viaduct, bridge and trafficway construction, costing $1,000,000; and $500,000 to complete the city's open-air theater in Swope Park.

• Plenty of water—Kansas City has plenty of good Missouri River water for its 440,000 residents. It has just completed 7¼ mi of trunk main at a cost of $2,250,000, increasing its distribution system capacity by 30%. The city also sells water for supplying 135,000 people in outlying districts.

Melvin P. Hatcher, director of the waterworks department, has developed a price range to wholesale purchasers of water that is working out very satisfactorily. There are 28 metering stations located near the city limits, serving the various purchasers, which net the city water department about $360,000 per year.

• Macy's started something—The observant centennial visitor will notice many physical improvements in Kansas City's civic, commercial and industrial construction: Macy's $7,000,000 remodeling and additional construction project at 10th and Main, last year, sparkplugged a widespread store-modernization program throughout the downtown area . . . the Corps of Engineers' new 9-mi levee, recently completed under the direction of District Engineer Paul D. Berrigan at a cost of $3,850,000 including 6 pumping stations to be completed this year, will permit development of a 4,000-acre industrial site . . . the $5,000,000 Southwest Trafficway—a 25-yr dream, to be completed this year—will funnel high-speed traffic from the heart of the city, to a connection at 48th St. with U. S. Highway 50 leading east to St. Louis and west to Topeka and the Rockies . . . an integrated grid of one-way streets expedites traffic in the business area . . .



Canadian National Exhibition Grandstand, Toronto, Ontario. Architects—Marani and Morris; Consulting Engineer—Gordon Wallace; Contractors—Pigott Construction Co., Ltd., all of Toronto, Ontario.

Minimized SHRINKAGE, Great DURABILITY WITH POZZOLITH CONCRETE

Minimum volume change and long life under severe weather conditions were important concrete requirements to be met in the construction of this Canadian National Exhibition grandstand. Pozzolith, cement dispersion; widely used in building stadia*, provided these requirements and the following *plus* advantages:

- EASY PLACEABILITY
- ASSURED STRENGTH
- LOW PERMEABILITY
- GOOD APPEARANCE

Authoritative methods for concrete design, specification and production are ACI (613-44) and ASTM (C94-48)—both based on the water-cement ratio law. Pozzolith, also conforming with the water-cement ratio law, used with these methods produces the best, most economical results.

***Partial List of Stadia built with POZZOLITH CONCRETE**

University of Arizona Stadium
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Orange Bowl, Miami, Fla.

Michigan State College Stadium
E. Lansing, Michigan

Stadium Addition
Collingswood, N. J.

Stadium, Tiffin, Ohio

Allentown School Stadium
Allentown, Pa.

Hershey Stadium
Hershey, Pa.

University of Texas Stadium
Austin, Texas

Cotton Bowl, Dallas, Texas

Stadium and Bull Ring
Sports City, Mexico

Stadium, Havana, Cuba

Jai Alai Sports Stadium
Manila, P. I.

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CLEVELAND 3, OHIO — TORONTO, ONTARIO

Resilience—

—an important quality in pavements serving today's heavy traffic

The resilience of this Texaco Asphaltic Concrete pavement is an important reason for its durability under the heavy traffic of this Massachusetts street.

To cope with the increased volume and weight of today's traffic, a pavement needs every advantage engineers can give it.

One of the most important qualities a pavement can possess today is resilience, the ability to absorb impact. The heavier the impact, the more essential resilience becomes, if a pavement is to give lasting performance with minimum maintenance.

Construct resilient, heavy-duty Texaco Asphaltic Concrete or Texaco Sheet Asphalt paving wherever heavy traffic must be served. For important city streets, main highways or major airports, these shock-absorbing pavements are logical choices. Proof of their durability and economy under severe traffic conditions can be found throughout the country east of the Rockies.

For helpful information on Asphaltic Concrete, Sheet Asphalt and other plant-mixed types of asphalt paving, write our nearest office for the booklet, "Texaco Asphalt Paving—Plant-Mixed Types."

THE TEXAS COMPANY, Asphalt Sales Dept., 135 E. 42nd Street, New York City 1

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